THE EXPLORING CHILD

a handbook for pre-primary teachers

Ruth Kohn

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A HAND-BOOK FOR PRE-PRIMARY TEACHERS

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PREFACE

THIS Handbook is one outcome of a research study conducted in Ahmedabad in 1967-68 under the auspices of the Gujarat University School of Psychology, Education and Philosophy. The project was entitled A PSYCHOLOGICAL AND EDUCATIONAL STUDY OF PRE-SCHOOL CHILDREN. A professional monograph reporting the complete study for educators, psychologists, and other interested persons is available from the Gujarat University Press.

The Programme described in the Handbook is designed to increase children's activeness in school, to cultivate such personality traits as curiosity, open-mindedness, resourcefulness, concentration, thoroughness, confidence, respect for self and others, responsibility, independence. It is felt that the school can be a positive and effective force in constructively channeling and focussig children's energies and broadening their horizons, as well as helping them to learn skills with which they can continue learning for the rest of their lives.

This assumes that activeness is a desirable quality. It seemed to those who adopted the Programme that it is not only desirable but necessary : in the twentieth and twenty-first centuries in which these children are going to live, life will change very fast. We may not like to see some of the old ways go, we may not like all of the changes that we see, but regardless of our personal feelings, we must recognize that change is taking place. People move from one town to another and learn new habits. Communication is such that we can fly to the opposite side of the globe in twentyfour hours, and receive news of faraway events in a matter of a few hours. What happens in India is known right away in England and vice versa. Technology develops so rapidly that the facts we learn as children are outdated before we are twenty years old.

Schools have a responsibility to recognize these sociological facts and to help prepre children to live in the world which

will be theirs, to help them to learn to deal with change. Their circumstances as adults may be far different from those of their parents, or they may not. This means helping them to learn to make their own decisions, for they may or may not be able to or want to rely upon others to do that for them. Thus they will have to learn to judge truth from untruth for themselves, to sift and evaluate informations, to decide what is important and what is irrelevant, to find out facts and understand underlying relationships. If democracy is to prevail, they will have to do this in the difficult realm of politics and social events as well as for technical and scientific matters. For such training, we cannot start too young, in very simple ways helping children to become independent, to form sound judgments, and to have confidence in their own abilities to act and to judge.

One may, however, question the value placed upon "activeness". One may say that it is more desirable to accept the world as it is without trying to change it, to accept one's place in life. We all know how troublesome a curious child is, and the fact that the words "naughty" and "mischievous" are often applied to such a child, is a symptom of a deeply rooted point of view. In many parts of the world, patterns of family life and child-rearing practices, educational systems, taking or not taking responsibility and initiative in a job, all reflect a non-active outlook. All who use this Handbook are therefore urged to thoughtfully consider the value on which it is based, for its consequences are far-reaching.

A second assumption follows from the first: namely, that a child who is alert mentally, who interrelates happily with other people, who freely speaks what is in his mind, who has good body coordination, will learn more and more effectively in school than a child who is passive with respect to these qualities. This means that the school authorities at all educational levels think highly of such qualities and encourage them, and that the school programme is designed to foster such qualities in children and in teachers.

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The aims of this Handbook are four-fold:

—to help teachers to observe children and to stimulate their understanding of children's behaviour.

—to define principles and purposes on which to base a programme for the Pre-Primary School.

—to provide an example of an organized structure for activities, based on the defined principles and purposes.

—to provide guidelines for day to day work with children.

Based on the promise that activeness is desirable, the Handbook describes an organisation of activities, time, space, and materials which promote the personality traits associated with activeness. The organisational structure is then filled in with many detailed institutions to actually carry it out; it is difficult to put principles into practice without some clear ideas of day to day working.

Readers will find the programme highly structured, with continuous stress upon organisation and orderlines. This emphasis is the result of the author's observations that persons who have not had previous experience in making choices and in planning have great difficulty when they are suddenly placed in a situation where they must direct themselves, however desirable this may be in the long run. They therefore require a frame of reference to begin with, which they can then modify, adapt, and build on according to their needs and imaginations.

The research study of which this Handbook is an outcome was conducted in a particular urban setting. Other cities and towns and rural districts will present a different set of circumstances. It is believed that the points of view about learning and the types of activities would be equally desirable and possible in any setting : the emphasis upon children's participation, doing things themselves, using their hands rather than simply memorizing. The specific activities offered might be changed to suit local need. Village children may need more stress upon health and cleanliness, would have a syllabus based upon what is around them and using materials locally available. It would be a great mistake for schoolmasters to simply copy the pattern given. To modify practices

while retaining principles, calls for extreme resourcefulness on the part of teachers and administrators, understanding the fundamental premises and approach and being enormously sensitive to children. I consider the approach and attitudes far more important than any particulars described, and sincerely hope that the needs of all may be served.

All materials used in this programme were found locally. It cannot be recommended strongly enough that these materials are meant to be suggestive, and that each locality make use of inventive adaptation of its own resources. Very little is in fact needed : one of the aims is to provide the maximum stimulation with a minium of materials. There is no point to clutter in a classroom and no point in duplicating materials when one can do the work of two if that one is wisely chosen. Economy is desirable intellectually as well as financially.

The Handbook is intended for use by administrators and teachers in Pre-Primary School. It could also prove useful in Teacher Training Colleges, in classes of Child Development and on Principles and Practices of Pre-Primary Education, serve in as a basis for discussion of the needs of the child and how the school can meet those needs, or read as a source book with supplementary materials, to stimulate reflection and analysis of the Principles on which to base a Programme and how to carry out these principles in the details of the school day.

Great efforts may be made to create a thoughtful, through programme consistent with a given set of principles, and to carefully choose equipment for carrying it out. But the best designed programme is only an aid, a strong aid no doubt, to the critical role of alert, responsive teachers. The personal example which they set is the motivatinge ducational force.

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I wish to thank the many persons involved in the research study and in the development of the Handbook:

-children, teachers, parents, administrators of the Participating school.

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Ruth Kohn

The Child and The School

I. THE CHILD AS LEARNER

IT is axiomatic that everyone teaching young children should first have some understanding of the nature of the child. We must know how his body develops and what he can do at different stages of growth. We must know how he feels about other people and about himself. We must know what makes him afraid, what makes him happy, what interests him and how long he can stay at one thing, depending on his age. We must have some idea about how he thinks and understands the world around him, how he adds new information to what he already knows.

The scope of this handbook does not permit a lengthy section on Child Development; for this, the reader is referred to recent texts on the subject. (Footnote with titles.)

However, it is necessary to consider briefly certain important aspects about how the child learns.

1. The young child is naturally curious and wants to understand.

Very young children are immensely curious about everything they see and touch. They are interested in many things simultaneously. They poke into and take apart everything in sight. They inquire about all that they see, human, animal,

mechanical. They want to know who made everything, what things are made from, how pieces fit together. They want to know why and how, not only the names of things.

At the beginning, they have no idea of cause and effect or of the inter-relationships among things. They love to watch the striking of a match, taking it as magic, only later question why the flame comes. They ask many times, "Who is Jagdishkaka?" "Who is Ramamasi?" "Shatishdada is what to Ba?", trying to understand the relationships of the people in the family.

Their strong desire to understand the environment is certainly due, at least in part, to the desire to control things. There are so many unknowns around, so many things that affect them, that happen nearby, that come upon them mysteriously, and over which they have no control. Understanding brings with it the power of control, so satisfying to a small person generally at the mercy of the adults.

2. **His stage of development is such that he needs ample scope for movement.**

Healthy small children are wiggly and restless. They are always active, running, jumping, taking things apart, scribbling, eating, crying, asking, watching, laughing. Theirs is a world of action, with their whole bodies, using all their senses. This is natural to their stage of development, it is the natural way to find out and to become strong. A baby who sits and never tries to walk will not develop strong legs; a child who does not taste lemon will not know the meaning of sour. Children find out about things by touching, hitting looking, tasting, listening.

Adults may complain that a young child's attention span is too short. Yet when the child is interested and personally involved he will play for hours on end, quietly or noisily, as the case may be. His attention span is only short for adult-imposed, adult-type activities.

3. **He learns by doing.**

It is of critical importance that children have a background of actual experience in doing and handling all sorts of things *before* they are required to explain them, in order for the words to have real meaning to them. Only by themselves acting out, manipulating materials, going through trial and error many times over, do they come to realize relationships and concepts.

a. *By play and imitation.*

Many people say that play is merely for amusement, letting off energy, or keeping busy. It is indeed all of these things, but more importantly it is the child's way of learning. He spontaneously copies all around him—and what a good mimic he is ! By putting dolls to sleep and going shopping, he comes to understand what a mother does and what a shopkeeper does. When he imitates on his own initiative, he comes to feel and act like the person or thing he is imitating, and thus understands them "in his bones". When he plays boisterously, climbing a wall or swinging, he strengthens his muscles and develops coordination. He gains a sense of balance and confidence in the use of his body, a confidence basic to his later development.

b. *By his own experimentation and discovery.*

Pouring water from one mug to another, a child realizes a property of liquid, compares how much different vessels will hold. These concepts will slowly be verbalized; after many repeated experiences and observations, the day will come when the child dashes in excitement to the teacher: "Look, look, four little mugs fill up the big one. Look, look I'll show you, come, see." The thrill of discovery fills the child with pride, the teacher and friends sharing the excitement reward his discovery, and the child has truly grasped a concept that is basic to scientific learning. Then he will make a formula, in his own terms, and trying it out in many cases, will further generalize.

c. *By action, by all the senses, not by words.*

Suppose the teacher were to tell the child: "Now, listen to me. One mug is very small and another mug is very big. Four of the little mugs will fill up the big mug. Do you understand ? Now repeat after me. Four little mugs will fill up one big mug." He will memorize the formula, but its significance will escape him, and when he is confronted with other fourths and wholes he will not see any connection. Demonstrating will help a bit but only his own repeated action will enable him to discover a sound understanding.

Thus he does not learn by one or two senses alone, by hearing and seeing. These senses are still removed for him, and he must supplement them by touch, and even smell and taste where possible. And his action and use of senses must be self-directed, his own experimentation and handling, not just an adult putting something under his nose and saying, "Smell this." He must be actively involved, not half-heartedly participating, if the experiences are to be fully meaningful.

4. **He learns by repeated experience.**

The young child has to have experience after experience in order to understand the concept involved in the word "Wind", for example. He feels wind blowing against him on a windy day, sees wind blowing trees and bushes, feels wind from the fan, blows through a straw and makes bubbles, plus many more experiences over and over again. Then he comes to group all these things under one heading and to associate them with a word.

When three-year-olds are permitted to play in sand, how many times over they will fill a bucket, empty it, fill it again. It seems such a tiresome task to the adult, and such a waste of effort. But the child is interested in the act of filling, not in the full bucket. The filling, perhaps a hundred times, teaches him control over the spoon with sand, the weight of sand in spoon and sand in bucket, strengthens muscles as he

carries the full bucket about, teaches him the texture of sand, how it pours, how it spills if you are not careful. When he has satisfied himself, he will pass on to do something else with the sand.

5. **His experiences, his horizons, are limited.**

Considering his age, his experiences are naturally limited. He has not seen or done much outside of his home and his immediate surroundings. He knows mother, father, brother, sisters, probably grandparents and some aunts and uncles, and friends of the family. He knows home and the homes of relatives. But inland children do not know the sea, mountain children do not know the plains, nor can they imagine them at all clearly. Ideas also are limited. Knowing that water comes out of a tap, a child once explained rain by saying, "God opened the tap." This is an explanation in terms of his own experience, which in terms of that experience makes sense; his experience is limited and so adults laugh, but the child is very logical in his own way. How can he be expected to know anything about the rain cycle?

6. **They are egocentric, see all things in terms of themselves.**

Initially, a child sees everything only in relation to himself. "Where did he get a truck just like mine?" "The train is going to take *me* to Surat." "The rain is making *me* wet." He thinks of all things as they affect him only, slowly noticing how they may also affect other people. He does not at first realize that things may exist independently of himself—that the train goes to Surat, daily, whether or not he is on it. That daily train doesn't interest him especially to begin with, but only the fact that *he* is going and that it is carrying him and his family. Only gradually, over time, with experience upon experience, does he come to realize that people and things exist separately and independently of himself.

7. **He passes through "sensitive periods" of optimum readiness for growth in certain aspects.**

Mme. Montessori has given us the very useful notion of periods in a child's growth when he is just ready for certain types of development; if he misses that period, the development will not take place fully and smoothly. These are stages, not fixed points. A baby will start to walk anywhere between the ages of eight months and one and a half years, and no two children will start at exactly the same age or in the same way. Certain things must precede walking—sitting, creeping, crawling—and all must occur, in their own time, before the baby can walk. This notion of sensitive periods applies to all learning in early childhood; the rate of child's development and passing through the stages will be affected by his environment and his health.

8. **Conceptualization requires language and language development furthers conceptualization.**

Once the child has the name of the shape "square" he will expand his concept of square and start excitedly naming all the square objects that he sees. Without the word, he is unlikely to pay much attention to the four-sided, four-corneredness of objects. As he becomes more observant the child wants to know the names of things; once he knows the names, he immediately puts them to use.

9. **A child's logic is not adult logic.**

He wants to see order in the world around him, but can construct this order only according to what he knows and has experienced.

a. *He learns by building from the known to the unknown.*

A child will pick up many things on his own, and will figure out how his pieces of information could fit together. But he may not on his own get all relevant information, and he may

put it together back to front or by magic. When he experiences something new, he will tie it in with what he already knows, trying to see how the new thing can make sense. The first time that he sees a lady wearing a frock, he will wonder how such a big person can be a girl, associating her clothing with what he knows that a child wears. Only with explanation from an adult and repeated contact with ladies wearing frocks, will he realize that this is a different style of clothing which some ladies wear, as well as girls. In this way he will extend his concept of frock to include large ones, and will extend his concept of woman to include frock-wearing as well as sari-wearing. The child who explained rain by the big tap in the sky was making a logical transfer from the known to the unknown, within the limits of his experience. Thus in some way, every child attempts to explain the unknown, and the unknown is fitted into the child's scheme of things. The relationships that he makes may not be the ones which adults would make, and from the adult point of view the child has many misconceptions and gaps. His ideas of order, of cause and effect, will be those which make sense to him in terms of what he already knows.

b. *Concepts form cyclically.*

A child may be satisfied with a brief answer to a question at the moment that he asks it. That answer will be taken in and fitted into his scheme of thinking, gradually absorbed. A month later he will ask another question on the same point and make some connection in his mind with the first. The next day he may notice something that seems to be related. So, slowly, his understanding will deepen and become increasingly clear.

This building of relationships is continuous and cyclical; concepts are never finalized, but are constantly subject to modification, correction, and deepening of understanding. They change as new information is added to old, as the old is seen in a new light. By asking children to think of other things that pour, like milk and gum and dal, the concept

"liquid" begins to be formed. This must later be further distinguished from the class "solid", by experimentally discovering the fact that liquids have no shape of their own but take the shape of the container they are in.

10. **Each child grows at different rates.**

In different aspects of development, all children grow at different rates from other children. While "stages of development" and "sensitive periods" are useful tools for discussion, they refer to the processes, to the broad continuum of growth in all its aspects. This must also be broken down further, so that we may understand different aspects of growth such as physical (large muscle, small muscle, internal organs, etc.), social, emotional, intellectual. There will be certain stages of development for each of these aspects, which every normal person passes through. But growth is not smooth and balanced. How often we have seen the child who can draw neatly and imaginatively, yet is afraid to join a race. Or the child very skilled at climbing any wall, who has not small muscle coordination or attention span to hold a scissors and cut. Growth is uneven, and often seems to go in spurts. A child may become very competent at large muscle skills then for six months seem to make no improvement at all—but become much more friendly and cooperative just at that time.

There are certainly "norms" of development for different ages, but a norm represents an average of everybody and does not in fact represent any real person. So the norm may be that five-year olds are at the sensitive period for learning to read, but some will be ready at four and others at six years of age. The average, or norm, is made up of the extremes as well, and those children of the extremes are each going through the stages of development at their own pace.

II. THE PRE-PRIMARY SCHOOL AS A PLACE FOR LEARNING

1. The School as a place for learning.

JUST by living, all people go through millions of experiences, pick up information as they go along. The special job of the school is to focus those experiences, by its syllabus and teaching methods, forcing a more careful look at certain types of things. It helps to organize and structure information by providing certain types of experiences planned to clarify feeling, thinking and judgements. It expands knowledge by exposure to experiences and materials which have never been encountered before and which are not likely to be encountered without attendance at school. It helps to acquire the tools to continue learning, to search out information, reason out concepts, express thoughts and feelings, each person for himself.

There are also other functions of the school, which it shares with other institutions like the family. Most importantly, these include the transmission of the cultural heritage, adoption of customs and values for personal life and for social living.

These functions of the school are as true for the Pre-Primary level as for the University. The manner and content are of course different, appropriate to the abilities of the students.

2. The Pre-Primary School also has certain special functions.

The Pre-Primary is in some ways like all schools. Infants learn so much in their homes : how to work, talk, eat, love,

be loved, share. Why can't small children just continue to learn at home? Why should they go to school?

1. *School-going is a serious business*, especially in this modern world where knowledge and circumstances change so quickly. It is therefore valuable to the child if he can start schooling early, to develop the habits of mind and work that he will require throughout his life.

2. The Pre-Primary school acts as a *transition between home and formal schooling*. As the child's first experience away from home regularly and for a long period of time, it in some ways resembles the home and the teacher is in some ways like a mother—but not completely. There are many children of the same age, and the teacher must attend to them all equally, so she cannot give special attention to any one child. The routine at school will be for the benefit of all children and not catering to any individual's whims. Some experiences in school will be like those at home and some will be different.

3. By being *one in a group of many children* of the same age, supervised by only one adult for all those children, the child comes to realise that he must share and work with others and that other persons are just like he is, with similar needs and wishes.

4. Few homes can provide the *concentrated and sequentially* organized experiences which the good Pre-Primary School plans and provides. Few parents have the patience, knowledge. training or time to spare to help their children to develop as fully as the child can.

5. From a happy and stimulating experience in Pre-Primary School a child is more likely to *look forward to and enjoy all schooling* to be ready for it emotionally, intellectually and physically, to have the habits which will lead towards success.

3. **Experiences for learning.**

We must expect that in school the child will find experiences which he will not get at home, planned by the persons responsible for the syllabus in a sequence that will be within

the child's ability and interests yet push him on a little more. The activities will be carefully thought-out to meet the nature and ways of learning of the young child, and will keep in mind the many elements and conditions necessary to making a syllabus. There will be opportunities for growth in all aspects.

EXPERIENCES FOR SOCIAL DEVELOPMENT AND ATTITUDES

Many children of the same age come together. They must learn to share, to help each other, to listen and talk to each other. They learn that no one child can have all the attention. They learn habits of getting along with other people, like not hitting, asking rather than grabbing for something, not crying when they don't get their own way—they learn to be "socialised". They learn to share responsibility; this is an age when they enjoy putting equipment back on the shelves or spreading mats for nasta.

Because each child is only one among many, he must become more independent. He cannot always have the teacher's help in solving his quarrels or feeding him or buttoning his shirt or even in getting a book for him. When he wants something, he soon realizes that he has to help himself.

He takes responsibility for helping others. He helps to spread the mats, to make the class ready, puts away equipment in its proper place. The teacher explains that these things are done for the benefit of all, so that other children can later find what they want. He comforts a child who is crying, without having to call the teacher, develops sympathy and compassion and realizes that others may feel as miserable as he does sometimes.

EXPERIENCES FOR LANGUAGE DEVELOPMENT

The school provides time for many informal as well as formal language experiences.

Having to talk with children and adults who do not understand his babyish expressions, his speech develops rapidly. Children who could hardly form sentences when they came to school, quickly begin saying what is necessary. They learn rhymes and stories and their vocabularies increase. They

want to make friends, and with their friends to discuss what they do at home or what they saw at the circus or what they are making from clay, and so fluency in language grows.

With increased vocabulary and fluency of expression, ideas also come. Having learned the word "circle", they begin to see so many more circles everywhere around them, become excited by their own ability to observe and recognise (hence building self-confidence), and make clear their concept of circle. Being able to discuss with their friends and with teachers, they gain information about the experiences of others, learning new facts or points of view or confirming their own. For example, four children who have all gone to the circus separately may play circus in the sand. One wants to be ring master for the lions, one remembers that the lions jumped on stools, another remembers how fierce they were, and the fourth does not remember the lions but was fascinated by the trapeze artists. As they talk, they combine their experiences, and all are richer at the end of the play period. As they become free in speaking, they are able to understand cause and effect more clearly, to explain relationships that they might see and therefore to see them in a new light of understanding. Feeling that his clay has become dry, a child looks at it, says, "The clay is all in pieces. My ladhu has crumbled." Another child might add, "It's not wet any more", or the teacher might ask, "Why has it crumbled?"

Fluent speech and increasing vocabulary also lead to playing with words, making up puns and rhymes. "Timbuctoo, Timbucthree." "One fat cat lived in a hat." "C-cat, C-come, C-cake." Thus they listen more closely to sounds, speak more clearly and slowly come to understand how their language works.

EXPERIENCES FOR DEVELOPMENT OF SKILL

"Eye-hand coordination" is pre-requisite for reading, writing and many of the other activities in our adult world. This means the ability to do with our hands what we see and what our eyes tell us is the correct way to do something.

We may be able to recognize the letter "c" but reproducing it in writing requires quite an additional skill. This starts with strengthening the small muscles of the hand. Strength comes from using the hands to hold, catch, make objects. The medium can be sand : forming balls, pouring a heavy spoonful of sand into a pail, carrying a heavy pail of sand around the play-yard to sell "ice-cream." The medium can be clay : modelling shapes, rolling out "snakes", pounding the clay, modelling recognizable objects large or small, working intently with two fingers to join a leg to a tabletop. The medium can be a ball : learning to catch it, to throw it in a definite direction. Starting drawing at a young age, the child will slowly grow accustomed to and become comfortable with the crayon, and so later with the pencil. By being allowed to scribble at first, and by receiving encouragement and praise for his scribbling and later for his designs and drawings, he will be relaxed in holding and using the crayon, and will enjoy it. By being encouraged to draw or paint in his own way, he will come to value his expressions, thoughts, feelings. Writing will be an extension of the same. Once there is strength and the instruments like scissors or thread can be handled so as to function properly, then the child practices their use to produce some effect that he wants : he coordinates eye and hand. He tries to cut along the line of a picture rather than at random or picks out and strings all the beads of a certain colour rather than any one he happens to pick up next. This development from one stage to the next happens naturally and unconsciously and can be observed in all children, each at his own rate of development.

Large-muscle strength and skills are as important as those of small muscles, for the full development of body and mind and for a person's full confidence in himself. The child who can run gracefully and quickly, who can manage a swing, who can climb freely, who can balance himself on a height, is comfortable with his own body. He feels sure of himself, takes pleasure and pride in moving, is relaxed as he walks and runs as well as when sitting, has a sense of rhythm. Therefore, the school provides ample space and

many opportunities for development of the large muscles of legs, arms, and torso, and for control of balance. This is done informally during recess, when children can swing or run or slide or roll tyres as they wish. It is done formally through the organized games of running or throwing, catching a ball, through drill and dance ; in these activities, children also learn the social requirements of following the rules, respecting others' skills, and of playing the game for the fun of it, losing or winning.

EXPERIENCES FOR DEVELOPMENT OF CONFIDENCE

Self-confidence is a quality fundamental to success in school and in life, and it is, therefore, a critical trait to be fostered in the school. As the child helps himself more and more, he gains confidence in being able to do so many things. He is proud that he can put on his own shoes and shows everybody. He is so pleased at being able to cut pictures with a scissors that he will sit for half an hour doing only that, thus also improving his skill and ability to concentrate.

One critical aspect of self-confidence is the realization that one's own idea, one's own way of looking at the world, one's own manner of expression, are worthwhile and worthy of respect and recognition. The Pre-Primary School can offer many opportunities for creative activities and personal expression. Paint, crayons, clay are some of the media in which a child can work in the way that he wants. He does not need to follow instructions and make a clay aeroplane the way the teacher does, but experiments with what clay can do, and himself discovers, after making long pieces time after time, that by putting one across the other at right angles he has the basic form of an aeroplane. What joy in his discovery ! A child will get up and shout "Ben, Ben, look at my aeroplane," and fly it noisily around the room—then go back, show his friends, make many more. All share his satisfaction, the teacher praises him, his friends look with envy and quickly copy what he has done, learning from

him how to make an aeroplane. Then a whole squadron can go flying and the pleasure of group activity follows.

EXPERIENCES FOR INTELLECTUAL GROWTH

Children are familiar with that which is immediately around them. They know how they should dress, how their neighbours dress, how their dress changes with the time of year. They will have noted the similarities and differences, although they may not have thought of the reasons for these. By informal but careful questioning the teacher can help to realize, for example, the relation between weather and clothing, man's response to his environment. Children will have seen aeroplanes flying overhead, but what an experience to see them close, on the ground at the airport, to see them landing and taking off, to talk to pilot and stewardess, perhaps even to go inside. By this one trip, their entire concept of aeroplane broadens and deepens. In a carefully planned programme of experiences inside and outside the classroom, the school can increase understanding of common objects and ideas and can introduce the child to many things he has never known before and would otherwise not encounter.

The activities planned by the school and the materials offered can provide a graded sequence for learning, which children go through each at his own pace. Cutting means just cutting any paper, in order to master the skill of holding the scissors; then it means cutting along a line, around a picture or something drawn; cutting through different thicknesses; cutting freehand to make a design; elaborating that type of design indefinitely; cutting free hand realistic pictures. Realization of the order and sequence inherent in every material is of crucial importance in the Pre-Primary School, for only then can rational guidance be given in the development of skills and concepts.

When opportunities are available a child will come to see relations of cause and effect, will try an "experiment" to see what happens. He will pour dry sand into a pipe and let it pass out the other end, then pour in wet sand and watch what happens. "Wet sand gets stuck." "It goes through

only little by little. I can't pour in a lot at once. That's because it's sticky." Over time, his concepts will gradually develop and become more clear.

Even children four years of age can do experiments in a scientific way. They can observe, guess what will happen next, test their guess by observing again, reach a conclusion. A group around a tub of water has put a pebble in and notices that it sinks. One child throws in a small wooden board and they notice that it floats. The teacher asks, "what will happen to the spoon if we put it in the water?" Children guess. They put the spoon in, and see what happens, and over and over again try many objects. Eventually they generalize about objects that will sink and objects that will float.

It will make a great difference in the child's intellectual development if the school plans opportunities for scientific work and logical associations, i.e. experiences which are relatively complete, and where scientific relationships can be observed. A child can learn that there are many possible bases for categorising fruits and vegetables: those eaten cooked, those eaten ripe and those eaten unripe, those with many seeds and those with one large seed and those with few seeds, round ones or long ones, different colours of skin, rough skins or smooth skins. They can realize that categories may be discrete or over-lapping; some fruits are eaten only raw, others are eaten only after cooking, some may be eaten either way. They become aware that objects look different on the inside from the way they appear on the outside. Children will in this way have tools with which to approach what is unkown, way of thinking which will enable them to see relationships and to make new relationships for themselves, in any area of life.

In this way the school can facilitate and speed the child's understanding, and many times can point the way to a comprehension that might otherwise never occur.

The foundation for academic work is laid in the Pre-Primary School. The child learns the first steps of reading, writing, and working with quantity and numbers. These experiences

should be according to his "sensitive period" and, therefore will not be the same for all children, but should be at the level of the child's own understanding. Mechanical learning of these skills which are basic to civilization can cancel out any constructive attitudes developed in other activities.

EXPERIENCES FOR DEVELOPMENT OF CONSTRUCTIVE HABITS

The way that a child feels about work and approaches work develops from a very early age. If he feels interested in what he has to do, if he feels competent to deal with it successfully, he will go to it with great enthusiasm and gusto. The task must challenge him, yet not be beyond his ability. This interest, eagerness and satisfaction are the qualities that will make him look forward to his work throughout his life. When he is interested, the child naturally will concentrate on his work and do it thoroughly.

At the age of about three, the child carefully notices his environment, and where things belong. As he is at this time coming into contact with an ever-enlarging world, he is a little afraid of all the new things over which he has no control. This is, therefore just, the period when he is "ready" to develop habits of neatness and keeping things in their proper places. He needs every object to have a place, to know where he will find something that he wants. In this way he can understand his environment and exercise some control over it. The school, therefore, provides a place for everything: one cupboard for painting materials, another fixed place for books, a place to put the children's lunch boxes. Children then can take what they need by themselves and by themselves return things to their assigned places, learning neatness and a sense of order that will remain with them for the rest of their lives. Such neatness then can be extended to their own work: neat notebooks, neat handwriting, proper posture for writing. This is not a neatness imposed by the authority, but one which the child himself has grown up with and whose value he comes to realize deeply over time. Orderly work habits and orderly thinking go hand in hand.

Good health habits are fundamental to everything else. A sick child cannot do anything to his full capacity. Therefore the school takes special care to watch children's health and to teach children to be clean. The teacher observes children daily for signs of cold, fever, etc.; a doctor comes to give periodic check-ups wherever possible. Children themselves should be clean, wash their hands before eating, brush their teeth, have clean hair and ears, wear clean clothes, and they should also keep their surroundings clean. They should drink clean water and eat health-giving foods.

4. The environment planned for learning

Mme.Montessori has defined school as "a prepared environment in which the child, set free from undue adult intervention, can live its life according to the laws of its development." (MARIA MONTESSORI, E.M. Standing, Academy Library Guild, Treso, Colo; c 1957, 99).

This means that the school prepares an environment conducive to focussing, guiding, expanding the experiences, understanding, and skills which the child will naturally develop in the course of growth. Environment refers to the school grounds and classroom as well as to equipment placed within it.

Every detail of this environment must be carefully planned, for children are extremely sensitive and all details are educational. Consistency is important to small children, for consistency creates an order and structure which become understandable. If neatness is expected from children, then school grounds should be clean, the classroom walls and windows should be in good repair, broken equipment should not be used but immediately repaired, there should be a definite place for all materials and each thing returned to its place after use. Notes sent home to parents should be clearly written on sheets of paper with straight edges. The list of points to remember could be made very long indeed, and all would be equally significant.

Order and system in the environment invite orderly

thinking. If pictures of animals are pasted on pink cards and pictures of fruits on green ones, children will have an automatic aid in separating the two groups and will be able to focus on the characteristics of each. A fixed place for each activity, every day, makes it possible for children to be independent and go to work by themselves. Just as order and system are crucial in planning activities for the Pre-Primary School, so they are vital teaching aids to consider when organizing the environment.

In choosing equipment, several criteria are to be kept in mind. India is not a nation which can devote great resources to Pre-Primary Education, and the educators have an obligation to be economical. This means economy of expenditure for financial reasons, and also for educational reasons: children can come to realize that they must be resourceful and careful, must use what is available at hand and not long for the glamourous, that they must be flexible and do the most possible with whatever they can find. Materials must thus be minimum in quantity but for maximum educational advantage. The educators must examine all materials with the questions: "How many skills and concepts will this teach?" "Does it have possibilities of use by children at different stages and of different ages?" "In how many different ways can the children use it, that I can think of? (Children will undoubtedly think of many more!)". The educator needs to be inventive and analytical and know children very well, must have clearly in his mind all of the things he wants to teach, so that he can see potentialities in all sorts of things.

He needs only to go to the local bazar and look around carefully, to find so many objects that can be given an educational purpose. Sieves for sifting flour are excellent for experiments with sand and water. Chikoo seeds are fine for counting. A wide assortment of buttons provides a whole range of sorting exercises. Cut vegetables, like potatoes, onions, lady fingers, make excellent stamps for printing designs. Pictures cut from newspapers and magazines are useful to get children talking, discussing ideas and new

experiences. Very few things will have to be made especially for teaching, although there will certainly be some.

Another criterion to keep in mind when choosing equipment is durability. With twenty or more small children in a class, it is so easy for things to get lost or broken. What is suitable for one child at home may not be suitable in the classroom. Sometimes cost must be weighed against durability, and the item which is initially more expensive will turn out to be money-saving in the end, since it lasts longer.

Equipment must be well maintained. Paint brushes with worn-out bristles must be replaced, there must be a sufficient supply of paper, dolls' clothes should be mended, torn books must be repaired. Children cannot be expected to learn respect for and careful handling of equipment that is broken or has missing parts. Further, alert and eager children will become frustrated in using poorly maintained equipment.

Purchasing local, ready-made items means that they are likely to be inexpensive, and they will be replaceable. Using broken or incomplete equipment is educationally unsound, and replacibility is an important consideration.

As important as the equipment and its maintenance is its storage in a neat and accessible place. There should be a place of storage for every thing, easily seen and reached by children. Only in this way will every thing in fact be accessible. Storage should be according to a system and be sensible: those things which are used at the same time should be stored together. In this way children will unconsciously relate things and realize an order in their minds. They will learn to take care of equipment and to be responsible for their environment. It is thus possible for them to be independent and to gain self-confidence. Any stocks of materials which the teacher does not want children to take should be kept securely out of their reach.

5. **The teacher as a guide for learning.**

The difficult task facing parents and teachers is to nourish and channel children's natural curiosity and to provide the

encouragement, information, and stimulation that they require to continue growing. The teacher's role and the atmosphere which he or she creates in the classroom are critical factors in a child's education. We all remember our good teachers more than anything else in school.

The teacher is not the source of all knowledge and order, nor does she put a premium on facts as such. She does not sit at a desk in the class, with the attention of all pupils focussed upon her. She does not ask questions to test memory and elicit the one correct response. She does not expect all children to sit quietly at all times and listen to her words of wisdom. Her task is rather (1) to establish an environment and encourage children to use it, and (2) by her attitudes towards other people and towards work, to help the children develop similar constructive attitudes.

1. *The teacher prepares a stimulating environment.* Things should be available for the children to investigate and work with on their own. These should be carefully and consciously selected as discussed above, to stimulate development of concepts, widen horizons, encourage self-expression, strengthen muscles and coordination, encourage children to think, to work on problems.

2. *The teacher is responsible for making sure that the environment* is not only stimulating but also *orderly.* She has to check that materials are put back correctly, that they are kept in good condition.

The teacher must therefore check all materials daily, re-organizing and re-filling for the next day's use, and inform the school authorities well in advance when fresh purchases are to be made. This stress upon orderliness is orderliness with use. There is no point whatever in worrying so much about neatness and upkeep of materials that are never used.

3. *The teacher establishes a routine* as a framework within which freedom of choice and personal investigation can occur in an orderly way. She sets a few clear and simple procedures for work, rules which make it possible to live in a group happily, and adheres to them strictly. (a) Children

must complete a task and clear their places afterwards. (b) Children must handle materials so as not to break them. (c) Children must learn to wait their turns. (d) Children are not to grab things or tease another child. She sets up a timetable for work, for each day and for the whole week, that is followed every day ; children know it thoroughly, can remember and anticipate, "Today is Wednesday. What Individual Activities do we have today?" Children answer. "Who wants to paint?" Children raise hands. "Who wants to read books?" Children raise hands; etc. 'Now you may get the materials that you need, take them to the work places, and go and work. Towards the end of the period : "You have five minutes left. Finish what you are doing and clean your places." (*See point 6 below and page 45 for further detaits.*)

4. *The teacher paces* the day and each activity *according to children's needs.* She recognizes the need of small children for change of pace, so plans sitting activities followed by moving, noisy alternating with quiet, group with individual. She is sensitive to children's moods, so on a day when the class is restless she changes the activity earlier than the timetable requires. Her own voice and movements convey a feeling of enthusiasm, interest, and energy, even when sitting quietly. She continues an activity long enough for the children to understand and become involved, but not so long that they become bored. When playing sitting games, she will play two or three games in a period, each game repeated several times so that different children get chances and so that they can fully understand the rules, become absorbed and enjoy the game. If the teacher moves too quickly on to another game, thinking that children's attention span is short, then most children will participate only in perfunctory fashion and the disappointment in not playing more is easily read on their faces.

5. *The teacher helps children to learn techniques for using materials and sets limits* for the sake of safety and cooperative behaviour *but does not tell them what to do.* Thus in painting, she shows children how to dip the brush in colour, gently wipe

off excess colour on the side of the paint cup, apply paint to paper, then wash the brush in water before dipping it in another colour. She explains that these are the ways of working so as not to waste paint nor have colours too dripping nor mix colours. However, if after being shown and understanding, some child chooses to have drippy colours to see what will happen when they mix on the paper, then the teacher need not interfere. She establishes and enforces the rule that painting is to be done on paper only, not on the floor or on hands or on anyone else. She establishes and enforces the rule that one does not walk about with a wet brush or a cup of paints. Further than this, she gives no directions. She only helps with basic techniques and then lets the child work on his own.

Certain activities require more technical skill than painting. Cutting with scissors means holding them properly, with sufficient strength, cutting a straight line, cutting several thicknesses at once, cutting a pattern. These are skills progressively developed, over time. The teacher needs to give guidance at each stage.

6. *The teacher encourages children to make their own choices*, thus showing respect for their opinions and interests, helping them build confidence. In Individual Activities she makes a few activities available at a time, tells children what will be available or asks them once they know the class routine, lets each child choose what he or she wants to do within the limits of the amount of each type of material, encourages free handling and experimentation. When there is not enough to satisfy all, the teacher must encourage children to find something else to do while waiting their turns.

Order and routine in the classroom mean that children can independently find the things that they want, can take responsibility themselves for maintaining orderliness. The teacher generally does not need to show the children what to do, but can let them experiment.

In Group Activities children can choose the story they want to hear, the songs they want to sing - perhaps not

every day, but often enough so that they feel their desires are respected.

7. *The teacher is a guide who works with the children.* When they are at Individual Activities, she moves about from group to group, sitting down to discuss a book with one, suggesting that another mix less water with his clay as it has become too gooey, asking another which animals on the picture cards fly and which walk. She may sit for ten minutes next to a child who wants to see everything under the magnifying glass, then two minutes praising drawings, three minutes asking a few children to identify pictures in a book, and so forth.

During Group Activities, she sits in the circle at a level with the children or a little higher, so as to be part of the group yet its leader. She discusses and shares ideas, listens to all, does not lecture. When the teacher sits with a whole class for a lesson, this takes the form of discussion and sharing observations, by children and teacher alike, each contributing what he has noticed and the terms that he knows, the teacher in her greater experience guiding the discussion and offering a direction or a term at key points, but always willing to say "I don't know either. Let's find out."

8. In guiding children's work, be it individually or with the whole class, *the teacher asks pointed questions rather than giving answers.* When she sees a child who is stuck for a long time at one stage of an activity, who, for example, keeps sorting buttons at random for three weeks, she may ask him a pointed question about the properties of the buttons: "What colour is this button? Do you see any others of the same colour? Can you put all the others like this in one dish?" She does not tell him what to do, but guides him in finding the answers for himself. She encourages his exploration and inventiveness, and thus helps build his confidence in his own ability to find his own solutions. When suggesting that they walk like elephants, she does not say, "Hold your hand in front of your nose like this." Instead she asks questions about the elephant: "Is he big or

small? Is he heavy or light? What is special about him? How do you think he walks?" Once children start moving, she does not force them all into a mold to walk in the same way, but praises one child's manner of showing a trunk, another's heavy-footedness, another's slowness - so each can be satisfied in developing his own style. If a child asks. "Make me a boat." she answers, "Sit down and we'll each make one. You do it along with me." If a child complains that there is no green paint, she says, "See if you can find out how to mix it."

9. *The teacher is concerned more with process than with product.* She is interested in how a child paints, what seems to be the sequence of his ideas, if he paints over what he has done, how skilled he is in handling the brush. She looks at and praises the final painting, hangs it on the wall or keeps it in his folder, but it is not an end in itself. She looks at it in terms of what he painted last week, whether he plans his work, makes representative objects, thus gaining useful insights into his degree of readiness to read and write. When the child learns to count, she is more interested in his recognition that two sets both contain three things than that he can recite from one to fifty.

Because of her interest in process, she keeps a folder of each child's work. She looks through this from time to time, shows it to the child so that he may see his own progress, shows and explains it to parents. (*See page 54 for details*).

10. *The teacher observes and listens to the children.* She notes what they already know and can do : How clear is their information about the parts of a plant? Does Rajesh think about his picture before he draws? Does Kavita use her whole hand for making a snake of clay, or are her fingers well enough coordinated to use fingertips for shaping? Do the boys bang and make noise with blocks or are they beginning to make structures? What are the girls saying about a hospital as they dress the dolls? From all such observations, she can understand each child's level of development as a basis for helping him and guiding him onwards in his growth.

11. *The teacher encourages children to talk,* talk about their work and experiences. Their verbal abilities at this age are generally not highly developed, most childrens' vocabularies are small ; they show their interests and feelings through actions rather than through words. But the human world is a verbal world ; verbal communication, oral or written, is the key to our experience and to progress as individuals and as civilizations. By encouraging children's own verbal expression, the teacher shows respect for their thinking and ideas. She furthers their ability to speak by providing practice. Conceptualization requires language and language development furthers conceptualization.

This concern for talk means that the classroom will not be silent. Children need to learn to talk together in a normal conversational tone ; when they do that, the room will have the quiet hum of voices sharing experiences. It also means that in group lessons children's contributions, all children's contributions, are accepted and treated as valuable.

12. Fundamental to teaching in the modern world is the *scientific method.* Briefly this can be stated as : Observe, Guess, Test, Observe, Conclude. We notice the black clouds in the sky. We guess that it is going to rain. We watch the sky to see what will happen, if we were right or not. The clouds blow over, and there is no rain. Today the wind was strong enough to blow the clouds before they could drop the rain. This is a method of thinking which we may unconsciously employ in our daily lives, and is one which we could very satisfactorily use much more. It is absolutely essential in teaching science, but also in many other school activities. When one child hits another, the teacher may ask what happened (observe), why the child did it (guess), how he would feel if the same were done to him (test), get him to reply (observe), reason that therefore he shouldn't do that to someone else (conclude).

13. *The teacher* takes a role which *guides the construction of concepts,* helping children to realize the relations among things, to see one fact as it ties in with another, to develop

flexibility in thinking. Facts are important as materials for thinking, and are not ends in themselves ; how facts are used is more important than the facts themselves. These relationships can be on many levels. We may plant seeds and note the requirements for their growth. These are the facts of plant life. We may then compare the needs of a plant with the needs of a person, thus developing a concept of the commonness of all living things. Watching the plants, we may note the way they change as they grow, beginning a concept of change. Again this can be compared to a human or other animal. We may cook the bhaji we have grown and watch it change in another way, from different causes, when the leaves become limp and water appears. Thus the concept of change broadens to include physical change as well as biological change. In this way facts are seen as related elements within a unified world. Only in this way can information be given meaning, can a structure of knowledge be created, can an individual proceed to independent search and learning.

14. *The teacher also provides opportunities at other times in the day,* in other activities, for him *to recall his "science".* This can be done very simply if the teacher herself is aware and thoughtful, just by a simple sentence at the right moment, by a comparison or suggested observation that starts children thinking along these lines, thus helping them to integrate all their experiences. The teacher must try to understand the child's logic, to see why he is putting certain things together. It is not easy, but very rewarding once the effort has been made, and becomes easier with practice. Thus the teacher helps the child to build from the known to the unknown and to develop clear concepts.

15. Aware of the patterns of child growth and observant of the stages of development of the children in her class, *the teacher stretches the children's minds and skills.* She asks one child a question about vegetables that he had never thought of before, she asks another to work on that drawing a little longer and fill in the empty corner, she asks a third not to turn the page of the book so fast but to

look again at how many birds there are in the picture, she asks a girl to count the blocks in her tower. She tells the names of things in a picture, explains how snow in the picture feels. She adjusts the time table so that at the beginning of the year activities and pace are changed after 20-30 minutes but periods of work are gradually lengthened as children learn to concentrate for a longer time. She observes and understands children's natural patterns of growth, but knows that these can be helped along.

16. *The teacher must have a sound background of general knowledge and be interested in learning more.* Her own enthusiasm and curiosity set an example for the children. She must be willing to say, "I don't know" and follow it up with "Let's find out. How can we find out?" She must be aware of sources of information upon which she can draw : materials, books, people in the school and community.

17. *The teacher respects all children, all people, equally.* She recognizes the uniqueness of each person, welcomes the contribution of each. She tries to understand the motivations of each, and never ridicules any behaviour. She is willing to do any work herself and respects all who do their work well, whatever that work may be. She respects herself knowing that she is doing the best that she is able to do.

18. Finally, the *teacher's own attitudes* towards other people, towards work, learning, towards all life, are crucial. Children are extraordinarily sensitive and pick up the slightest shades of meaning in adult behaviour.

If the teacher says, "Put all the materials away neatly", but leaves her notebook on a chair after class, the children are likely to leave things behind. The same will be the case if she says, "All of you must help put scrap papers in the basket," but herself stands by and watches. Her words will have far greater effectiveness if she herself takes a share in the work. If she expects children to respect others, she must do the same, and never make fun of a child or make mean comments about a servant. If she expects children to be curious, open-mined, willing to try and find out, then these must be her own attitudes towards learning and life.

III. PARENTS AND TEACHERS TOGETHER

A PRE-PRIMARY SCHOOL child spends three to five hours in the classroom and the rest at home. This is his first experience with strangers, away from home regularly. At this age the child is still dependent on his mother to a large extent. Therefore, what the parents are like, what their ideas are, how they handle the child are important facts a teacher should know in order to understand the child as a total human being. Parents also need to have some knowledge about what the teacher is like, why and how she handles the children the way she does.

Sometimes a child's behaviour at school is very different from his behaviour at home. This is why the parents and the teacher may get very confused about the report that the child gives of the other person. Or the child's behaviour in one place may be directly affected by what happened to him in the other, and it will be a help to the child if parents and teacher inform each other about the child's routine behaviour as well as about unusual events.

There should be some direct relationship between the parents and the teacher to bring them closer to each other, exchange ideas and in general be familliar and aware of each others' approach and problems, to reduce the inconsistency in adult behaviour confronting the child. This can be achieved in various ways. Informal parent-teacher meetings once a month, meeting of a parent with the teacher by previous appointment, parents dropping in at school before or after school hours, organizing "Parents' Days" frequently, all are different ways to get parents and the teacher to meet informally.

IV. CONSIDERATIONS IN DESIGNING A PROGRAMME

1. Organizing the activities.

THE many possible activities in a Pre-Primary School should provide for the well-balanced, total development of all children. Any activity will in some way satisfy a child's need ; the question is which ones will do the most and the most effectively. Therefore, for the sake of discussion, we must categorize areas of development and types of activities. But it should always be kept in mind that these categories are only for the adults' intellectual clarity, for giving a backbone to the activities in a programme, and above all as a basis for deciding which activities to include. If the activities are organized according to some scheme in the teacher's mind, a sense of order will permeate to the children.

In the literature of education, many systems have been suggested. The system used in this Handbook is based upon the child's way of learning, and what he needs to learn, as these can be focussed and fostered by the school (see Part 1.) The following categories have been adopted :

1. Teacher-Directed and Child-Directed : the children must learn to do some things as instructed by an adult, and must also have opportunities to make their own choices ; they can be motivated by others or by their own selves.

2. Individual and Group : there is a need to work alone, and a need to participate and cooperate as part of a group.

3. Set and Open : some activities provide stimulus for mastering specific skills and following rules and must be done in a precise manner, while others provide for individual expression and discovery.

4. Physically active and physically quiet: there must be times to stretch large muscles and make noise, and other times for calm, concentrated attention.

5. Development of body and development of mind: the child is a whole person and must be cared for as a whole person.

Every activity in fact contributes to many aspects of development. A sorting game can be taken up spontaneously or suggested by the teacher ; it can be played individually or in a group ; it involves the development of many intellectual concepts; children will interact socially as they play; they will discuss and the teacher will encourage them to describe their reasons for sorting in a given way ; it means learning and following the accepted rules of behaviour sometimes and sorting according to one's own criteria at other times.

It is desirable that any activity should satisfy many needs. One of the premises of the present programme is the search for activities which each contribute to as many facets of development as possible, so that all may mutually reinforce each other, integrate knowledge and experience, and thereby strengthen all capacities of a child. If a child is unwilling to join a particular activity, like clay work, he is almost certain to find another activity which he does like and which will enable him to develop the same things as working with clay even if not as directly or as thoroughly.

On the other hand, each particular activity is especially suitable for advancing certain aspects of a child's growth. There is nothing like dolls, with clothes and a few household toys, to help children reconstruct their parents' roles and come to understand adult life, to express their own feelings about the adults closest to them, to engage in constructive social exchange. The person designing a programme for Pre-Primary school children must therefore select a series of activities balanced so as to meet all of a child's needs.

Some children will certainly have definite preferences for particular activities, and their tastes and talents should be respected. At the same time, all children should be encouraged to at least try everything. Pre-Primary School children

have limited experience; one of the functions of the Pre-Primary School is to broaden their horizons, which means giving them opportunities to do things which they have never done before. Since there may be psychological reasons for a child's resistance, for example, to sand play—his mother insists that he keep clean at all times, or he is frightened by so many children playing so close together—the teacher must be sensitive and encourage gently when she meets resistance.

Activities are classified below by their dominant characteristics. Play in sand or with blocks comes to be highly social in nature, and so is called "Group Activity," even though many children will start this type of play alone, and will go back to working by themselves from time to time.

The following chart lists the particular activities included in the present programme, according to the major headings "Child-Directed" and "Teacher-Directed" and the sub-headings, "Individual" and "Group" and "Open" and "Set." The detailed sections dealing with each activity indicate how these and the other categories are present, in proper balance, in actual practice. Activities other than those listed here could be equally suitable, providing they fulfil the needs as outlined above.

CHILD-DIRECTED		TEACHER-DIRECTED	
INDIVIDUAL	*GROUP*	*INDIVIDUAL*	*GROUP*
Art Painting Drawing Clay	Play with : Sand Water Dolls		Music Dramatization
	OPEN		
HANDWORK : Paper-cutting and pasting	Large muscle play	Readiness for reading and writing	Stories Science Games and Demonstrations
	SET		
Books folding Science		Numbers	Organized games

2. Organizing the time.

The average time spent would be as follows :

CHILD-DIRECTED		TEACHER-DIRECTED		NASTA-RECESS
1¼ hours		1¼ hours		1/2 hour
Individual	Group	Individual	Group	
3/4 hr.	1/2 hr.	1/2 hr.	3/4 hr.	

This makes a total three-hour day, appropriate for children of this age.

At the beginning of the school year, with children who have never been to school before, it may be necessary to allot more time to Group Activities, both Child-Directed and Teacher-Directed. The Child-Directed Group Activities permit children who are uncomfortable in the group to work alone if they wish, without forcing isolation, permitting them to join or share freely for only a moment when they want. They can work happily beside someone doing just the same thing, not communicating directly, yet aware of another presence similarly engaged. The Teacher-Directed Group Activities give the children a chance to do things together without having to take initiative. Most are set activities, and as such permit children to follow a leader quietly until they are ready to assert themselves.

The allotment of time listed in the chart above might be reached after about two months of school, depending on the adjustment of the group of children. The sequence of activities should suit the group, providing change of pace from one period to another, i.e., a period of quiet concentration should be followed by a time for free movement, and that, in turn by quiet work again. Further re-arrangement of the timetable becomes necessary when the children can concentrate for more than 45 minutes on Child-Directed Individual Activities. Then the balancing of the total programme will have to take place over the week, rather than each day.

Within the categories listed above, the teacher must plan the weekly timetable in such a way that all activities are included within the week. For Child-Directed Individual

Activities, it is considered advisable to make three or four activities available on each day. This number has been chosen so that children will have choice of activity, and thus form preferences and learn to make decisions; on the other hand, only a few activities are available and children are expected to work at those only, so that they will in fact have to choose something and stay with it for some time, learning to concentrate. They may move from one to another of the given activities, but when the teacher sees a child continuously wandering she should try to interest him in some work. The few activities should be planned so as to give variety on each day. It is suggested that an activity be given two or three days consecutively, so that children may remember what they did the day before and have a sense of continuity, so that the teacher can honestly say, "You can finish it tomorrow" at clean-up time. A suggested weekly timetable for Child-Directed Individual Activities is as follows:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Painting	Painting	Painting	Drawing	Drawing
Clay	Clay	Clay	Handwork	Handwork
Books	Books	Books	Books	Books
Science	Science	Science	Science	Science

It is wiser not to include Painting and Handwork on the same day, as both require relatively more teacher supervision. Books and Science are included daily since children need ample time to examine these materials and make their own discoveries, to expand their horizons.

For Child-Directed Group Activities, all the materials listed above can be available every day, during the allotted period, and children make their own choices of what they want to do. The nature of the materials permits flexible groupings, so that one day there may be ten children with blocks and two in the sand, while another day only three are with blocks and fifteen are in the sand box. In either case, there will always be something which each child can do in the activity of his choice.

Teacher-Directed Individual Activities involve simple exercises, sometimes all children doing the same thing at the same time but more often each child working on whatever is suitable for his stage of development.

For Teacher-Directed Group Activities, the teacher must make a weekly time-table that includes all activities within the week. For example, there may be singing for half an hour thrice a week, stories for half an hour twice a week, games for fifteen minutes twice a week, science for fifteen minutes thrice a week, dramatization on Saturdays. It may happen that children become very absorbed in a science project or in making a drama, so that they will want to spend a lot of time with that. The schedule should be flexible and permit such changes, to meet children's interests and needs.

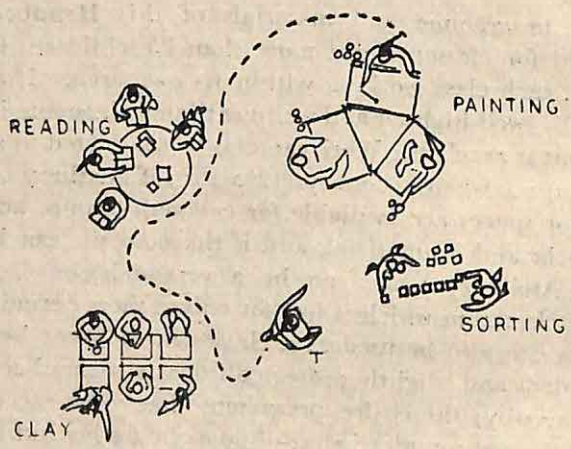
3. Organizing the space.

The programme and materials of this Handbook are intended for classes of not more than 25 children to each teacher, each class working within its own area. If a large, (30′ x 30′), well-highted and well-ventilated classroom is available, that is excellent. Work can also be conducted in a much smaller space when necessary (12′ x 15′), if auxiliary outdoor or indoor spaces are available for energetic group activities like blocks and dramatizing and if the sand pit can be outdoors. Auxiliary space can be a verandah, or chowk or another classroom which is free for only a short period. The outdoors can also be used as a classroom to great benefit if it is shaded and slightly protected from non-school activities and passers-by; the entire programme has very successfully been conducted completely out-of-doors in a school which had no Pre-Primary classroom, but by means of stone floors and low walls, had created a series of spaces in a mango grove.

The class space should provide for display in several ways. There should be walls or bulletin boards on which children's work can be tacked (changed every two weeks) and on which teaching aids like the physiology charts (*see* section on Science below) can be hung. Simple bulletin

boards can be prepared from large measures of fishnet or light cloth hung from four nails at the top of the wall, covering an entire wall, attached to nails at the bottom so as to be tight; papers are then attached to this with straight pins. Conventional bulletin boards are less useful since they are costly and so tend to be small. A very satisfactory bulletin board can be made by stretching jute on a thin wooden frame which is then nailed directly to the wall; this can then be 40" wide (width of the jute) and as long as is desired. It is also possible to glue it directly on a wall. There should also be arrangements for display of three-dimensional objects, on shelves in the room, at a height convenient for children to see easily. A series of crates can be used for this purpose with smaller boxes inside.

During Child-Directed Individual Activities, three or four activities are given simultaneously. Each activity must have

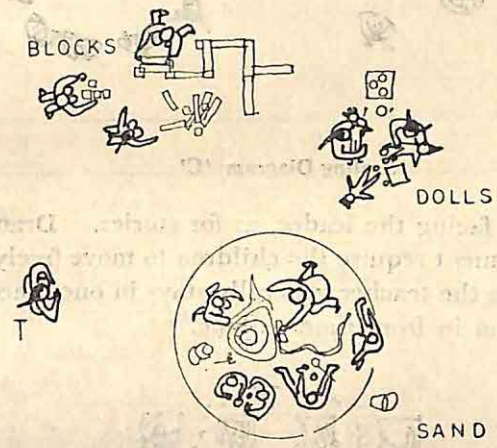


Seating Diagram 'A'

its prescribed place in the room, so that children know where to go with the materials which they take from the storage places. The children may then seat themselves at the activity of their choice, conveniently in reach of what they will need. They should not move from that place with materials in

their hands, but complete their work at that place. The teacher has no fixed place but moves about the room from one activity centre to another, supervising and encouraging as needed.

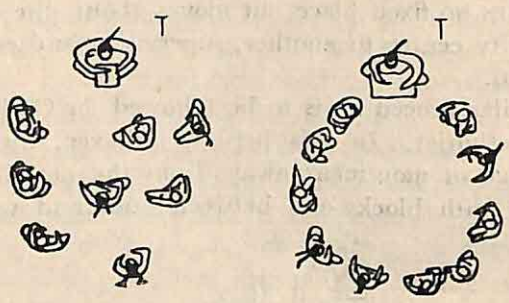
A similar procedure is to be followed for Child-Directed Group Activities. In this period, however, there may be some range of movement away from the activity centre, especially with blocks and between sand and water.



Seating Diagram 'B'

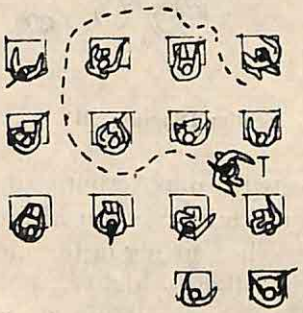
For Teacher-Directed Group Activities the arrangement of space will vary with the activity. For Music, a circle is most suitable, with the teacher sitting in the circle as a member of the group, perhaps slightly higher. For Story-telling or Story-reading, children may sit in a tight group, at the feet of the teacher who sits slightly higher than the children. The arrangement for Science Demonstrations depends on the materials to be used. When an object is to be handled or inspected, children can sit in a circle. For a Demonstration, a three-quarters circle works well, so that all can be equidistant and see without crowding. When there is to be an explanation, discussion, or showing pictures or a chart, where the focus is the teacher or a child leader and all are

to be attentive to what the leader is doing, then seat children



Seating Diagram 'C'

in a group facing the leader, as for stories. Dramatics and Body Movement require the children to move freely across the room, while the teacher generally stays in one place although she may join in from time to time.



Seating Diagram 'D'

In Teacher-Directed Individual Activities, children's seats may be organized in rows, with sufficient space between for the teacher to pass among them and stop to help any child who needs it.

4. Organizing the materials.

LIST OF MATERIALS

Suitable for a class of 25 children
(Prices are for Ahmedabad, 1967-68.)

Item	*Capital Expenses*	*Yearly Expenses*	*Recurring during the year (amounts are yearly totals)*
1	2	3	4
PAINTING			
2 massala dobhas (as paint tins, covers hold paint for finger painting)	14.00	..	..
3 old jars (to store prepared paints)	0.75	..	..
4 large paint brushes (brush 1 inch wide, handle 10 inches long)	..	6.00	..
4 small paint brushes (brush 1/4 inch wide, handle 6 inches long)	..	6.00	..
Powdered colours : red, yellow, blue (Shivaji brand or some other with strong pigments)	..	..	13.20
1/4 kilo starch (to make finger paints)	..	..	2.50

1	2	3	4
1/2 ream white paper (for small brush painting)	..	..	8.00
DRAWING			
3 used empty tins (to hold crayons)	0.63	..	..
10 crayon boxes, 12 colours each	..	..	5.00
PAPER CUTTING, PASTING, FOLDING			
1 wastebasket	..	0.75	..
3 very small vatkis (to hold gum in use)	0.32	..	..
4 scissors	5.00	..	..
3 brushes (to apply gum)	..	3.00	..
2 large gum bottles	..	..	8.50
kite paper, assorted colours	..	..	1.00
GENERAL ART SUPPLIES			
3 strawboards (to paint and draw on, on the floor)	..	3.75	..
2 reams newsprint paper (used in painting, drawing, pasting)	..	..	28.00
1 quick-writer (to make teaching aids)	..	2.50	..
a few poster paints (to make teaching aids)	..	..	5.00

1	2	3	4
miscellaneous papers and card papers (to make teaching aids)	..	2.50	..
CLAY			
4 wooden boards ("patlas")	8.00	..	..
1 used kerosene tin (to store clay)	4.00	..	..
1 meter plastic cloth (to line tin and wrap around clay to keep it moist)	3.00	..	..
clay for modelling (preferably potter's clay)	..	6.00	..
BOOKS			
books (about 100 pictures)	100.00	25.00	
cellotape (to mend books)	..	..	5.00
SCIENCE			
1 magnifying glass	3.00	..	..
2 magnets	1.25		
set of buttons	..	3.50	
large plate (10 in. diam., for sorting set)	2.30	..	..
small tali ("boya", for sorting set)	1.50	..	..
10 very small vatkis (for sorting sets)	1.10	..	..

1	2	3	4
150 post-card size cards (to mount pictures from charts)	1.50	..	..
10 picture charts : animals (2 wild, 2 tame) birds, vegetables (2), fruits, planning process, transport	3.00	..	..
3 physiology charts : circulation, digestion, skeleton (available from Peak Publications, Pataudi House, Darya Ganj, Delhi-3.)	7.50	..	..
3 coloured ropes, each 1 met. long (for sorting)	1.50	..	..
25 small baskets (to plant in)	..	..	2.50
assorted fruits (for demonstration)	..	..	10.00
SAND			
constructing sand pit (bricks and labour)	15.00	..	..
sand	..	15.00	..
WATER			
1 32" galvanized tub	42.00	..	..
SAND AND WATER			
2 large aluminum spoons	..	3.00	..
2 small aluminum vatkis	..	0.60	..
2 large aluminum vatkis	..	0.70	..
2 small aluminum mugs	..	2.50	..

1		2	3	4
1	large aluminum mug	..	1.50	..
1	mug with spout	..	2.25	..
1½	feet clear plastic pipe (1 inch) diam.	1.15	..	..
2	funnels	..	2.00	..
1	fine strainer	..	1.25	..
BLOCKS				
1	set of teakwood blocks (120 pieces), plus storage cupboard	130.00	..	..
1	wooden toy bus	..	1.00	..
2	wooden toy cars	..	1.00	...
3	wooden toy trucks	..	6.00	..
1	wooden toy bullock cart	..	2.00	..
DOLLS		..	..	...
4	cloth dolls (foam-rubber stuffed preferably), plus an extra set of clothes for each	36.00	..	..
MUSIC				
2	manjera	5.30	..	..
Total Expenses		Rs. 263.95	Rs. 222.80	Rs. 88.70

Rs.

Total cost of all materials for the first year = 575.45

In a class of 25 children, average cost per child for the first year = 23.00

Total cost for the next five years = 280.00 maximum

Average cost per child for the next five years = 12.00 maximum

For each activity a fixed and limited number of implements are provided, for example four paint brushes, six scissors. There is, an educational as well as a financial reason for this limitation. It means that the number of children who can participate at the same time in each activity is restricted, so that children will have to make choices and learn to share equipment, giving up something that they have been doing for some time (unless they are sincerely absorbed and are at a stage when this absorption is particularly important to them—all rules must have some flexibility) or waiting their turns. A wealthier school may add to the list as given, but sharing is not learned when there is always enough of everything for every child. However, replaceable items like paint or paper are in unlimited supply, so that children can do as many paintings as they like and cut lots and lots of pictures.

All stock which is not in current use should be stored away out of children's reach.

Each type of material to be used daily should be stored neatly, in its own place, where children can reach it easily. This can be done by means of low cupboards, with or without doors. Then painting brushes, cups for paint and water, jars of prepared paint, clean paper, finished paintings, can be put in one section; clay and patlas can be on anoter shelf ; books can be in another corner ; and so forth.

A set of Activity Boxes can also be used (*see* Supplementary Notes' 1 for detailed sketches). These are six boxes, all 20" × 20", which fit one on top of the other for compact storage and are particularly useful in a small area where cupboards would take too much space. Each box has within it a set of smaller boxes, containing all the materials necessary for a given activity, neatly arranged. For work, the children can carry the box for each acdivity to its work place, sit around it, and immediately get to work.

Children have responsibility of keeping the materials for daily use in order. The teacher has the responsibility of making sure that there are sufficient materials ready for daily use, taking what is necessary from the stock, and replenishing the stocks as required.

V. CONTENTS OF THE PROGRAMME : PURPOSE, MATERIALS, METHODS

1. Child-Directed Individual Activities.

As has already been indicated, three or four activities are conducted simultaneously during this period. Each has its own prescribed area within the space for the class. At the beginning of the period, announce which activities are available for that day ; since a routine should be established, children will eventually remember which activities come on Monday, which on Tuesday, etc, so you can ask them, rather than announce. Then repeat the names of the activities, one by one, stopping after each to ask children who wants to do that particular work. Children raise their hands according to their choices. If some child does not raise his hand, ask him directly ; if he makes no choice suggest that he decide later or make a suggestion to him. If too many children choose one activity, select those who have had fewer chances recently and ask others to make another choice. Say they can change after some time. If a child chooses the same activity week after week, you may ask him to try something else.

When, all have chosen they may go to get their equipment, take it to the assigned place, and start right in to work.

Check on those who had not made a choice and try to get them involved.

Once you know the children well, once the children know you and the fundamental routine and are comfortable in the class, the strict routine can be modified. It may then not be necessary to ask in the group what each child wants to do but simply to let them do the work of their choice ; any conflicts of more children than materials for a certain

activity may then be settled on the spot, preferably without your interference, since children will already have the idea of sharing and waiting turns, of choosing an alternative. Or if there is a child who wants to continue reading beyond the time limit, his interest need not be forced into the next activity.

Your task then is to move from group to group, sitting a few minutes with those who are reading, asking and answering questions, perhaps reading a story, pointing out new pictures, guiding them to observe more carefully. Praise the child who comes to show his painting, talk with him about it. Go over to those working with clay, show them how to make a joint so they can join two parts of a figure, or comment on what they are making. On painting and drawing days, children will constantly be coming for you to write their names and date on a paper. Cutting and folding will take more time when you are teaching a new skill or making a new object with a small group. While moving and observing, there are also many moments when you can just be aside and watch ; these are good opportunities to make notes on children. (*see* Supplementary Notes 7).

Keep an eye on those children who are restless and tend to wander, and on the slow ones who do not pay attention to what they are doing. Talk with them, find out their interests and their friends, try to get them involved, without telling them what to do. One of the purposes of this period is for children to learn to make their own choices, and this purpose would be defeated by assigning them to some activity. However, there may be a child who has never tried anything and is unwilling to choose ; in such a case, after efforts to discuss the activities, to point out the advantages of each, and to find his own inclinations, you may suggest something if he still can't decide.

ART AND HANDWORK

Art and handwork in different forms are basic activities of the daily work period, providing opportunity for children

to gain many of the habits and skills to be acquired in the Pre-Primary School. They include "open" activities like painting, drawing, free clay modelling, and finger-painting, where children express their own ideas and feelings, following only minimal instructions based on a need for orderliness and maintenance of materials. There are also "set" activities, such as paper cutting, pasting, and folding; (Sewing can supplement or replace paper work. *See* Supplementary Notes 2 for details) in these, emphasis is upon practice of precise skills, but the activities become "open" once the children have mastered the basic techniques and then can work according to their own sense of order.

In these activities, as in so many others, the concern should be for process and development in growth, rather than for precision in the final product. This means allowing the child enough time and material to experiment with at his own pace.

PURPOSE

In both open and set activities, children gradually develop precise techniques, practise small muscle skills, gain the eye—hand coordination and precision necessary for reading and writing with ease and pleasure. In addition, there is ample chance for development of their imaginations and own representations of the things they see.

Observation of details is encouraged by the teacher when she asks the children interesting and thought-provoking questions. When a child draws a man without the essential features, questions like "How does he eat?" "How does he see?" or "How many fingers does a person have?" keep him thinking and counting his own fingers and observing just how many eyes and nose one has. This makes the child more aware and interested in finding out things by direct observation. This simple process is the basis of scientific inquiry.

The discovery that he can change a lump of clay into a form, a piece of white paper into a splash of colour, or change red and yellow paint into orange by mixing them, gives him pride and confidence in his own abilities and his power

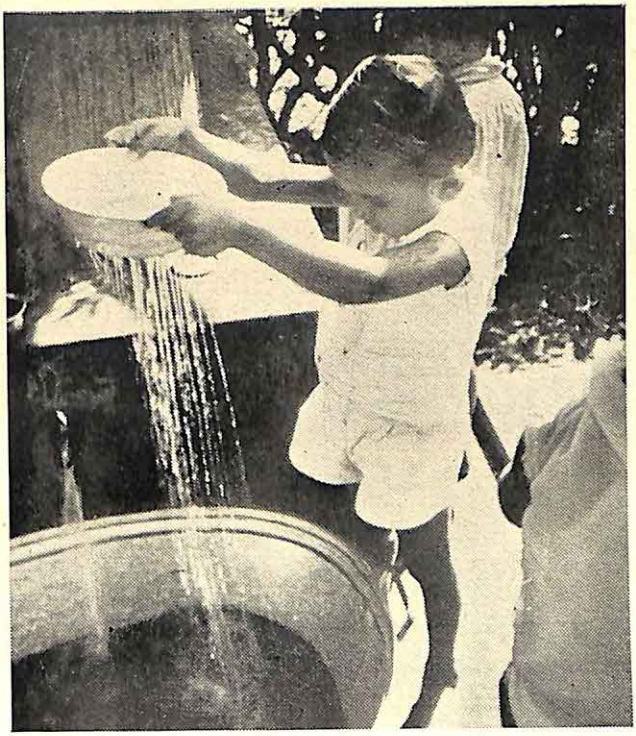
over that bit of the world. Instead of the teacher telling the child that blue and yellow when mixed together will make green, the child gets the chance to experiment with mixing paints and accidentally to find out that these two will make green. This kind of discovery may seem like magic to him and will give him an impetus to do more exciting experiments not only in mixing paints but in all spheres of life—life will become an adventure.

The work in hand demands a certain discipline of the children, especially in set activities. If a child wants to cut a design in paper, he has to fold it in a certain way and hold the scissors in a certain way. Through a multitude of such experiences a child slowly becomes an independent person, thinking about and understanding the consequences of his choices.

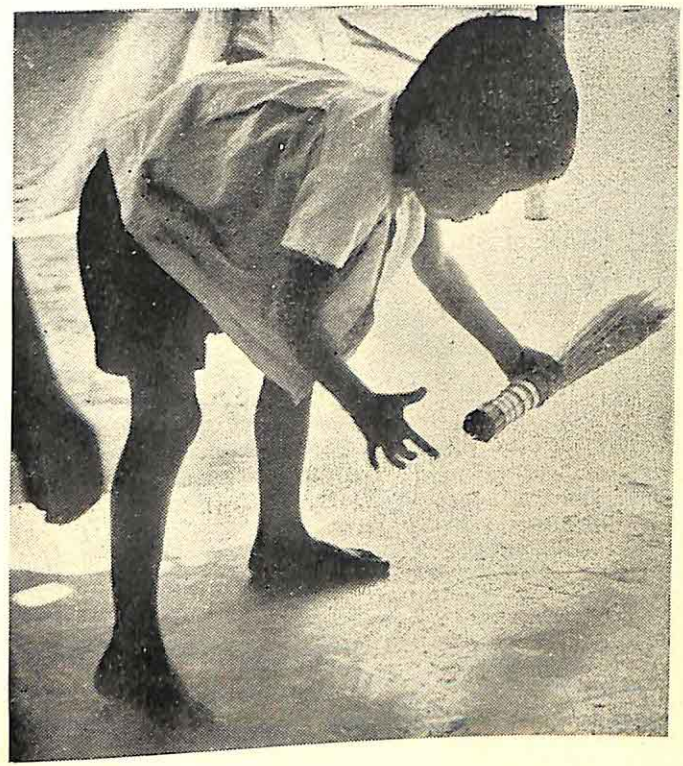
These activities are interesting and challenging to children. This is their "sensitive period" or their stage of "readiness" for learning such skills and expression, so they are eager to take the time necessary to repeat and repeat and in that way to develop their skills and to discover new ways, again and again and again. At the same time, they are also increasing their powers of concentration.

A child will be very proud when he has cut a square picture neatly along the edges. His degree of success is immediately apparent: either there is extra paper left over or there is not, either he has cut into the picture itself or has managed to cut around it evenly. Either these things matter to him or they don't. This is a task where the work itself gives its own rewards and satisfactions. No one needs to tell him what is correct, for the picture itself does that. This is an "instrinsic" reward, the type of reward that is the best in helping confidence and self-reliance to grow. Naturally, the teacher's recognition that he has cut so well will be welcome, and is necessary to the child.

The chance to paste on a white paper those pieces which he has cut out gives them a permanency, since the pieces are together and on a larger sheet which cannot easily be



He passes through sensitive periods (p. 6)



A child's way of learning is by play and imitation (p. 3)

lost. The child then feels the satisfaction that what he had done is valuable and worth keeping. Again, his confidence grows. This is also the principle behind organizing and keeping folders of all of each child's work.

A child learns social customs, values, rights and wrongs by observing these consciously and unconsciously and by repeated confirmation by their elders. In the Open Art Activities, like most of the other free activities (*see* Child-Directed Group Activities), a child gets scope to reproduce what is important in his eyes. Repeated reproduction reinforces and establishes the ideas more firmly in his mind. Children help teachers prepare for work, get and put away what they need, and in these ways learn that the school is theirs and that each one of them can assume the responsibilities of keeping it clean and orderly and of being helpful to others.

Certain activities satisfy very particular needs of the young child. Open Art Activities help release emotional feelings in children. Kneading a ball of clay violently or making big splashes on paper can release a surprising amount of aggression and socially unacceptable emotions. These activities can channelize the anti-social feelings of a child in a constructive way. Paper-folding is an art which can be begun with four year olds. They must follow directions very exactly, folding and unfolding just as they are told. They must make strong creases with their fingers, so that the creases will hold. They must remember which folds to make and in what sequence, so that they can make the objects themselves.

Stages of Development: Open Art Activities

At the beginning, when a crayon is given to a child, he looks at it carefully, may be tastes it a bit; he tries to scribble on the paper or on his body. All these are expected reactions. A child tests and experiments with any new object that he comes across. This initial stage of exploration and making friends with the medium is very important. Some children like to take a lump of clay and hold it in their hands without doing anything. This may disturb the teacher considerably,

but she should realize that just as adults cannot make intimate friendship with any stranger that happens to come along, so children also need some time for preliminary investigation to get to know an object well before they can use it effectively. How long this phase lasts entirely depends on the individual child ; it may last from a few days to a month. Each child may not go through all the phases as described, but skip one or go in different order.

A. PAINTING :—As a first stage, a child dips the brush in paint and intently watches how it makes marks on the paper or makes his palm change colour. It gives him a sense of power, and he does it again and again. Experimentation by dipping the brush only in water and making long strokes on the paper also goes on. More water-less paint, less water-more paint bring different results. The child starts with one colour, then adds more. The same form appears again and again. The next phase is mixing colours, which may happen accidentally. A boy may splash blue paint over red paint on the paper, and notice the changes. This will interest him and he experiments with different colours. The feeling that he can make yellow turn into orange by adding red is just as exciting as any major achievement is to an adult. Splash of one colour over another on the paper is the basic primary phase. He experiments with drops of paint that happened to drip on the paper, then purposely makes drips. A small girl tries to paint very thin lines with a thick brush for days and every time very excitedly shows it to the teacher ; to her each instance is a new discovery and has to be matched by the teacher's enthusiasm.

Painting some shape appears simultaneously with the experimentation with different colours. Sometimes when a child is finished with a painting, instead of taking another paper, he simply covers the painting with paint. This may seem destructive to the adults, but to the child it generally means the power to make and re-make, to start again.

The next stage is to fill the different painted shapes with colours. This is done spontaneously without any suggestions from the teacher and goes on for some time. Once a child

masters this, combinations of different shapes appear in the same painting. But these assorted objects may not be at all related to each other: there may be flower, ball, cooking stove, kite. Around five years of age, or somewhat earlier or later, paintings emerge with related objects such as school, house, books, pencil. Then, gradually, events such as a ball game, railway line with trains, bridge, signal-posts appear in the paintings.

B. DRAWING :— Scribbling is the first phase in drawing. Crayon usually is given to thech ildren before painting facilities are provided. If the child is physically mature and small muscle control is good, he can hold a crayon well. Scribbling erratic up and down movements on the paper, horizontal lines and curved shapes appear. Random forward and backward movements are very common. Gradually a form appears. This form is constantly repeated until mastery over it is established. For a while, a few scribblings will accompany all this form ; later, scribbling disappears altogether. Repetition of one form is added with another unrelated form. These forms are repeated at random until a pattern or story or event emerges in a single drawing. Around five years of age events like mother feeding the baby or a boy flying a kite appear frequently.

C. FINGER PAINTING :— Some children begin finger painting by putting their whole hands in colour and spreading it over board or paper with the palm and all the fingers. These children will then spread and re-spread the paint, seeming to feel satisfaction just in holding the colour in their hands. They will even squeeze their hands in and out, put paint from one hand to the other. Later, they will observe the patterns which their manipulations make on the board, and will start to make designs. Such children are relatively free in finger painting, and explore the many possibilities of the medium.

Other children are very hesitant, and begin by dipping the tip of one finger in paint. Their first attempts usually result in a series of dots of paint on the board. They then, slowly and with encouragement from the teacher, explore the

possibility of making lines, of using more of the hand, and begin to make more elaborate designs.

Having realized how they can work with finger paints, children will make designs using the fingers and hand in many different ways, and when they begin representational drawings, will also make recognizable objects when finger painting.

D. CLAY WORK :— At the very beginning, when a lump of clay is given to a child, he is likely to hold it in his hands, pat it, make it smooth by pressing it between two palms, feel the coolness and smoothness against his cheek or just sit fondly holding it in his hands. Children are cautious in making friends with another child, cautious of a strange dog or cautious of what seems like a messy lump as he remembers mother's warning not to get dirty. These are the most expected reactions. Unusual fears about usual objects are most normal among children around three; they need time to get familiar with an object. It is important to allow each child enough time to feel close to a thing. How much time should be allowed in this preliminary phase depends on each individual child. Usually after a few weeks, children seem to be making small round objects, calling these peppermints. Children start by making very simple things that are meaningful to them, such as chocolate, fruit, rotla, or other things to eat or to play with. Slowly, the products show more skill and maturity. Objects that are related to each other (a cooking stove, cooking pot, water pot) seem to appear in an earlier stage in clay work than in painting, perhaps because clay is easier to handle than a paint brush and is more concrete.

All other art work and all the art forms already discussed develop, depending on the physical maturity of the child. A given child might be very advanced for his age in painting and drawing but very much behind in scissor work. This uneven physical development may cause a child to stay in the first phase of scribbling for a longer period of time. It is advisable to watch and try to understand each child at his own level and not try to rush him just because others are "ahead" of him.

Stages of Development : Set Art Activities.

A. PAPER CUTTING :—In order to cut anything, the first stage to be mastered is holding the scissors properly and strongly enough so that it will cut. Some children are able to do this almost automatically at the age of three, while others may struggle for a very long time before they achieve a satisfying result. Yet all seem to find this activity absorbing, and can spend long periods of time working quietly.

Once children can cut through paper in continuous strokes, without needing to tear, they will cut around pictures, any pictures. They seem to enjoy the act of cutting and not to be very concerned with the matter that they are cutting.

Soon, however, they do look at the pictures and each child wants to choose his own picture for cutting. Some will have favourite subjects, like cars or watches, while others will vary considerably from day to day. At this time, they still cut only along simple outlines, often leaving a very jagged and uneven edge. As their skill increases, they cut more evenly and neatly, more exactly along an edge or outline. Soon they will even learn to cut around the arms, head, legs of a figure. Some children also take great pride in cutting very tiny pictures scarcely one inch across. All of the above stages are for cutting paper that is quite tough but not too thick or thin, like newspaper, ordinary magazine papers, or magazine covers. The cutting of card paper on the one hand and of thin kite paper on the other comes later, at a stage when muscles are stronger and control is more sure.

Once children can neatly cut along the irregular outline of a picture they are ready to cut designs that are drawn for them. From there it is only a short step to either drawing-cutting their own designs or cutting free-hand, without first drawing.

B. PASTING :— At first, children have no idea how much gum is necessary for a paper of any given size, and will put extraordinarily liberal doses on very small pieces of paper. Nor can they judge the edge of the paper or control exactly where they put the gum. As a result, their

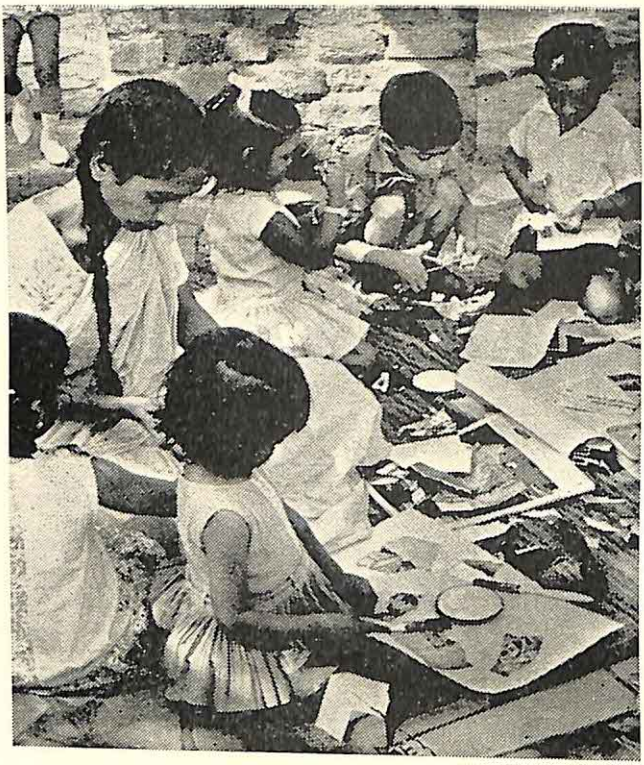
pasting usually looks messy for some months. Furthermore, at the beginning, children do not plan where they will paste a picture on a larger paper, but put the small paper anywhere, at random. Planning and judging, consciously deciding that pictures should overlap or be all in a line, right-side up, are skills which develop slowly. With experience children learn, and each child at his own rate will eventually be able to produce pasted papers which are neat and patterned.

C. PAPER-FOLDING:— The skills required in this Set Art Activity follow after the fundamental skills of cutting and pasting. Small muscle strength and eye-hand coordination must be quite good in order to make precise and strong folds, and the memory must be able to hold something as abstract as a series of three to ten specific folds. Children proceed from making folds carelessly—not sharp and not matching edges of the paper precisely—to great precision in their work.

The Importance of Keeping Children's Work.

All work that children do is inherently interesting and worth keeping. In order to better understand each child and his progress over time, we may compare his earlier and later work; in order to understand his total development, we may compare how he works in different art media, for each one has its particular skills and painting is very different from paper cutting. In addition, we may also understand a whole stage of development and series of stages, if we compare the work of many children of the same age within a certain period of time. Therefore, all children's art work is to be kept.

This can be done by labelling a double sheet of newspaper for each child, and weekly or at least monthly sorting his papers into his own folder. The children also will enjoy looking at their own work from time to time; although the youngest will not recognize their own work, more mature children will become aware of their progress and learn to judge themselves against what they did before, rather than to compare them-



Paper cutting and pasting (p. 61)

selves with others. These folders can be sent home to parents each term, if possible with an explanation as to the significance of the work.

Open Art Activities

PAINTING

MATERIALS

1. 4 large brushes ($1\frac{1}{2}$" x $1\frac{1}{4}$" long handles)
2. Dry powder paints: red, yellow, blue, to be mixed with water into a fairly thick consistency.
3. Large paper (newspaper without pictures, newsprint, or other paper, 20" x 30").
4. 3 thick strawboards or pieces of linoleum 30" x 40" (to be laid on the floor so that two children can put paper on each and paint) or wooden easels fixed to the walls or free-standing, with places for four children to paint at a time.
5. 2 mugs (for water to wash the brushes).
6. Small bowls to put paint plus a container for all the bowls so they do not spill. (massala dobhas were found very useful)
7. A few jars to store mixed paint.
8. A long rope and clothes pins.
9. Small brushes $\frac{1}{4}$"x $1\frac{1}{2}$"
10. Folders of newspaper (for collecting each child's work).
11. Aprons. These can be old shirts of father's, buttened backwards on the child, or long aprons especially prepared, of a style that children can fasten themselves; plastic material is the easiest to keep clean.

METHOD

Introducing the activity:—Have all children sitting in a circle, so that all can see you as you demonstrate. Spread strawboard on the floor, put a paper on it, dip the brush into paint, wipe it on the edge of the cup, paint a bit on the paper, rinse in the mug before dipping into a different colour. Show clearly how to hold the brush, about two inches above the bristles.

Routine—Children sit in the same corner of the room every day, two children at one strawboard. Write the name and date on a paper before the child helps himself in taking the paper. Children take all things for themselves, bringing them to the painting area. They put on aprons, if available. Once painting starts, children are not to walk around with a paint brush or cup of colour in hand. When a painting is finished, the child puts it on the floor in a prescribed place, careful not to put it over anyone else's wet painting, or, preferably, gives it to the teacher to hang on a line to dry or does so himself. At the end of the period, children pick up everything, clean the cups and brushes, and store them. Leftover clean liquid paint should be stored in jars for later use. All children's paintings are kept, unless a child is very insistent about taking his work home. Collect all paintings at the end of the period, and store them. Once a week, or at least once a month, sort the paintings (and other art and hand work) into each child's folder.

Three basic colours should be offered in the beginning of the year: red, yellow, blue. As months pass, other colours can be added by mixing the basic colours, adding black and white.

If a child seems at a loss for what to paint, ask leading questions about something that the child likes: "What did you do in Diwali? Did you feel happy? What did you eat? Were there any firecrackers?" Otherwise, do not interfere with the children or try to instruct them in what to paint. They will need reminders from time to time about wiping the brush or putting things away, and for such matters of technique instruction may be given.

After children seem to enjoy painting and do it regularly for some months (usually by January if painting has been first introduced in June) they may lose interest; when they are asked why they do not do it, they are at a loss to answer. Children around this time have developed better fine muscle coordination and may be bored with large brushes and large paper. This is the time when introducing small brushes on half sheets of paper, in addition to large brushes and large

paper can stimulate them enough to bring back the old enthusiasm for painting. They can paint finer, more intricate designs and more complicated forms with these as they are physically and mentally ready for it. The change in the children at this time can be very dramatic.

DRAWING

Materials

1. Large paper (15" x 20").
2. Wax crayons.
3. Small tins to keep the crayons.
4. Large strawboards or linoleum, used under the paper as during painting, should also be used in drawing, if the floor is not smooth. Otherwise, children may sit at tables to draw.

Method

Introducing the activity: Introduce drawing in the same way as painting.

Routine: Large strawboards should be used one for two children. A tin with crayons of all colours should be placed for both the children. Children should help themselves to paper and get their names and date written by the teacher, take the strawboards and crayon tins, set these out and start drawing. When the period is finished, some children should pick up and store the equipment in the proper place. Drawing should be done in the same area of the room every time. Completed drawings should be put by each child in an assigned corner of the room or shelf.

Move around the room and sit down with the drawing for a short while. Encourage the children but never draw for a child. Interesting questions such as "What else flies in the sky?" when a child draws a kite, or "What else does it have?" when a child draws a dog without a tail, makes a child think. Often a child feels very exasperated when he fails to draw what he wants. There may be a timid child who never goes near drawing. Try a new way of dealing with him,

and start thinking with the child about a subject that he loves for example, cars. After some discussion he may suggest casually that he would like to draw the red car that he is so interested in. He tries for a few seconds, gives up, tells the teacher, "I don't know how to draw, you draw it for me." The teacher, "I know, one feels this way when one can not, but I do think you will be able to, if you try just a bit longer." The child looks at her smiling face, tries again. She pays a lot of compliments. The child beams, she suggests wheels, he draws ; she suggests people in the car, he draws small round heads. When it is completed she says, "See, you do know how to draw. It is lots of fun, isn't it?" She makes a point to stay with drawing and notice that child and help him, for a few days. The child finally gets interested in drawing and from there to painting is a short step.

FINGER PAINTING

Materials

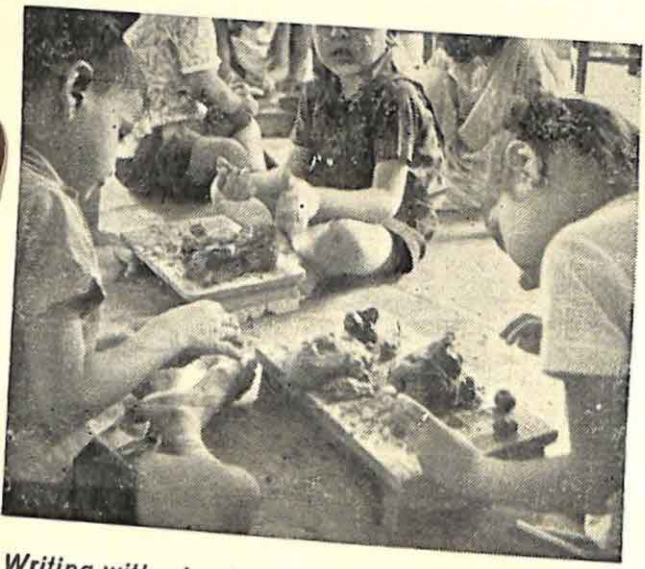
1. Powdered colours as for painting.
2. Wooden boards (the patlas used for clay serve very well), or paper which has one slick surface, 12" x 18".
3. Starch, water.
4. Stove and vessel for preparing starch.

Method

Preparing the paint : Mix 4 tablespoons of starch in ½ liter of water, heat and stir until the mixture is very thick. Add powdered colours : a very small amount of Shivaji blue is sufficient since the colour is very dark, while 2 tablespoons of red or yellow will make strong enough colour. Make one colour at a time for several sessions, and when children are thoroughly familiar with the technique, a second colour can also be prepared.

Introducing the activity : Same as for painting. Demonstrate different possible ways of using the hand : palm, side of the palm, drawing lines with the fingers, drawing lines with the finger nails, making dots with the finger

Finger painting (p. 58)



Writing with clay (pp. 59-61)

tips. Tell them that they do not need to worry about getting dirty, since the paint washes right off. Wash your own hands in water right then and there, to prove what you say. But warn that they should be careful of their clothes as it may stain them, or should wear aprons.

Routine : All children who wish to finger paint should take their boards or paper to the assigned part of the room, their names and date written on the paper if that is what they are using. Put on aprons. Have the paint ready in two tins, each with a tablespoon. Each child may take one tablespoon of paint on his board, and begin work, experimenting as he wishes, within the limits of safety and cooperation.

Encourage children to try different ways. Gently encourage those who are very hesitant, and praise what they do.

For the first several sessions, one colour will be enough, but from time to time give different colour on different days. Only when the children realize how they can make designs and feel comfortable and satisfied in working, should two colours be given at the same time. Then put two different colours in the two tins, one dark and one light, and tell the children that they may take two half-spoons, one of each colour. They may take one at a time, or both at the same time. They mix them, or make different parts of the design with each colour, as they wish.

When a painting done on a board is finished, the child will rub over it, put remaining paint back in the tin, do another or hand the board on to another child. When a painting done on paper is finished, the child should put it to dry just as he does for brush painting. However, once dried, finger paintings must be stored under a weight, or the edges will curl up. Once flattened, they will then remain flat.

CLAY

MATERIALS

1. Clay, preferably potter's clay.
2. 4 small wooden boards (Patlas), or a smooth board or stone slab long enough for four children to work side by side.

3. Large covered container to store clay, lined with large plastic sheet which completely covers clay.
4. Aprons, if available.

METHOD

Introducing the activity: Same as painting. Touch the clay and purposely get your hands dirty. This encourages the children ; those with an initial fear and distaste for clay would have their difficulty partly solved by imitating the teacher.

Routine : Clay work is to be done on the wooden boards which are then cleaned and stored for re-use. If many children wish to use clay, two may share a board. The same area of the room should be used for clay work every time. Aprons should be worn, if available. Children are not to walk around with clay in their hands or move the boards from one place to another.

Do not make an object for any child nor instruct them to make any specific object. It should be suggested repeatedly that children make whatever they like. Like painting, one should not expect realistic objects to appear immediately after children start clay work.

When children seem to have gotten used to the idea of clay, and have gone through the primary experiments of kneading and making small balls, suggest to them individually that two balls can be joined to make a man or animal. How these are joined is a technique to try first and then show the children. Make a small depression in one piece where the other part is to be joined ; then the second part should be placed on, so that it fits, and the surface all around be smoothed, preferably with wet fingers.

If the clay is too hard or too soft, use the opportunity to ask the children how it can be made softer or harder and encourage the children to experiment with their ideas in the class. Ask "What can make the clay softer ?" A bright child answers, "Water, milk, lemonade." This kind of answer should be encouraged because this is a flexible, resourceful, and independent way of thinking present in all children, and permits the child to express his sense of humour, to share a joke.

After the objects are made these should be kept on a window or table to dry. Later paste bits of paper under them with the child's name, date, and the name the child gives the model. They should be stored carefully.

When a child draws, paints, makes a clay model or any kind of object, no matter how it looks, what should you say to the child? The most prevalent response seems to be either to say that the creation is very good or that it does not look realistic enough. But both of these should be carefully avoided. Show interest, and look at the object, and make a comment which is truthful such as "It is really round, isn't it? or "These are four legs, aren't they? What is it?" Do not ask "What did you make?" without some positive qualifying comment first, or the child will feel that he is not understood. Children should be encouraged and praised with a smile and there should not be a mechanical and wholesale "very good" to all.

You may have to check the consistency of the clay frequently, to see that it does not become too dry. If so, it can be repulverized and soaked in water, kneaded to make it ready for use. Children can profitably and with pleasure assist in the task.

Set art activities : Hand Work

PAPER CUTTING AND PASTING

MATERIALS

1. Old magazines with pictures.
2. Old newspapers.
3. Coloured kite paper and other coloured papers.
4. White paper to paste on.
5. 6 small blunt scissors. These should be tested to see that they cut easily and are oiled.
6. Gum and small dishes for gum, brushes or small sticks where possible. Simple brushes can be made from neem sticks with cotton tied on one end.

METHOD

Introducing the activity : Demonstrate simple cutting. The children should be encouraged to hold the scissors in the right way. If a child persistently holds scissors with the left hand, he should not be made to hold it in his right hand. Demonstrate the technique of taking a small amount of gum on a brush, placing the paper to be gummed face down on a waste newspaper, applying the gum to all the edges.

Routine : Once plain cutting on newspaper is learnt well, cutting around pictures from magazines should be encouraged. At the beginning, there will be many pictures with heads cut off. This can be dealt with by gentle suggestions to be careful. Each child may paste his own paper-cutting on a sheet of white paper with his name and date on it. Some children will not have the patience or desire to paste, but rather want only to continue cutting more and more ; that also is acceptable, and they will paste at a later period. Gum should be spread with a gum brush. Small gum dishes should be made conveniently available for every two children. The children inform the teacher when they have no more gum, and she refills the dish, about 2/3 full.

Suggested activities : For cutting a mobile, draw a spiral line on thick paper and ask the child to cut along the line. Later with more experience, he will succeed in cutting without the drawing. When the mobile is hung from the ceiling or from a peg on the wall, it will go round and round in the slightest breeze.

To make paper chains, prepare many strips of a uniform length and width. Children gum the two ends of one piece together, pass another strip through the loop, gum its two ends together and so forth.

It takes some observation to recognize which ends to gum together, but is an easy and pleasant task for most four year olds. The greatest satisfaction and learning comes when a whole group is working on chains, each child making his section then putting all the individual small chains together to make one which can be very long indeed. Cooperation for the benefit of all, each contributing according to his ability, and

each necessary to the whole, are brought home dramatically in this experience. Later, children can also prepare the strips necessary for making the chain. A chain can initially be made from newspaper strips. It is naturally more attractive made from coloured papers, and then serves as an excellent festival decoration.

For making cut designs, fold twice a square kite-paper 6" ×6". Cut a bit here and there. Open it and it will have an interesting design. Show how the folding is to be done. As the children gain experience, they can do more complicated cuts. They can paste these on large papers.

All the unwanted pieces of paper should be carefully thrown in a waste basket. The room should be cleaned by the children after each working period. Keep all the art materials ready before the children come to the class, like the kite-paper cut into proper size from the large sheets, pouring gum into a few dishes, scissors in their box, waste basket emptied.

PAPER-FOLDING

Materials

1. Newspaper cut in 9 inch squares, for practice.
2. Drawing paper or coloured papers cut in squares of desired sizes.

Method

Introducing the activity: Sit with a group of not more than six children. Demonstrate the object to be made, fold by fold, so that children can have an idea of the sequence and care necessary, and can see the finished object. Then give them each a piece of paper. Make the first fold, ask children to do the same; help those who need it. When all are ready, make the second fold and children do the same, and so on, until the object is finished. Write each child's name on his object. Unless children are restless or too excited by their accomplishment, it is advisable to put the first object aside and immediately make another,

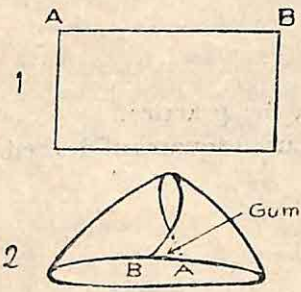
so that the folds and the proper sequence can begin to be fixed in the children's minds. If children are willing, they can make a third and a fourth; in that case, suggest that they try to remember themselves what they should do, and only help if they are stuck. Completed objects should be displayed on the bulletin board or put in each child's folder of work. This is the method for introducing any new object.

Routine: Once children know how to make an object, they need only take the paper and go ahead themselves. If a child cannot remember the folds or sequence, then help them, or ask another child who does remember to give some assistance.

Objects may then be decorated with painted designs or with crayons.

Suggested objects for paper-folding: The instructions given below are for representative objects at different levels of difficulty.

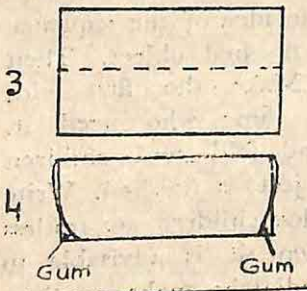
CAP 1



Hold a rectangle of paper (not too thin) (8" x 12" is a good size to fit around a child's head) and bend as in (2), bringing points A and B together.

Gum the ends together, and the cap is ready to be coloured and to wear. It may be decorated with a tassle, fringe, or designs coloured or pasted on.

CAP 2

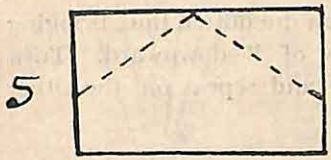


Fold a rectangle (8" x 12") along the dotted line, as in (3).

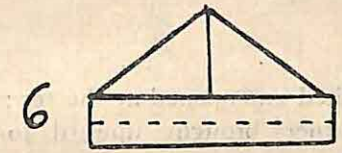
Gum together the two ends, as in (4). The cap is ready to decorate and wear.

This was invented by a five-year old boy. Other children may also discover objects to make.

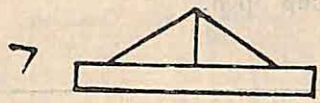
SAIL BOAT



Place a rectangle of paper (6" x 8" is a good size) in the position of (5) and fold on the dotted lines.

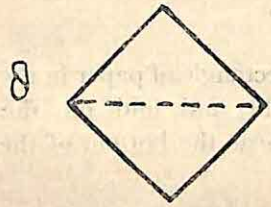


Fold up from the bottom on the dotted line, as in (6).

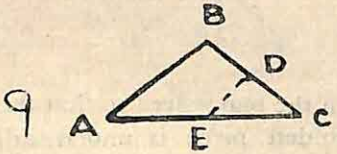


Fold the same piece again to complete the sailboat, as in (7). Gum the inside of the boat part to the sails, and colour it.

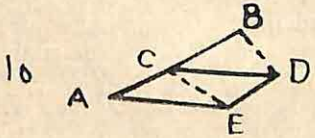
PAPER CUP



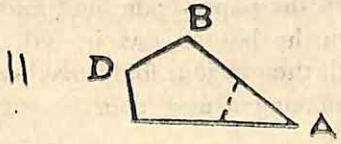
Place a piece of square paper (8" x 8" is a good size) in the position shown in (8); and fold on the dotted line.



Bring point C to line A-B so that line C-D is parallel with line A-E (as in (9); fold on dotted line.

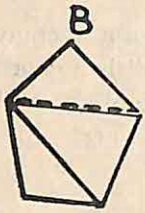


Cup now in position like (10). Turn it over to the other side (11).



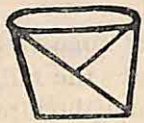
Bring point A to point D. Fold on dotted line.

12



Fold on the dotted line, bringing one point of B downward. Turn cup over and repeat on the other side.

13



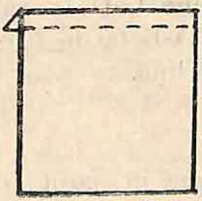
Finished cup opened at the top; lower corners brought upward to keep the cup open.

FAN

14

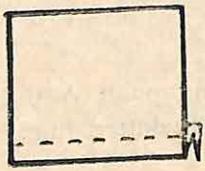
Place a rectangle of paper in the position of (14) and fold on the dotted line near the bottom of the paper.

15

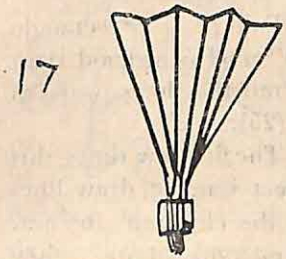


Turn the paper over so that the small folded piece is underneath on the top; as in (15). Fold on the dotted line.

16

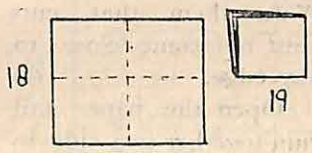


Turn the paper again, and fold up from the bottom, as in (16). Hold all the previous folds together when making a new one.

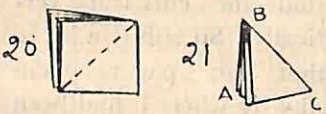


Continue the process in the same way, alternating folds from front and back until the fan is completed. Wrap and gum another small paper around one end to hold it closed as in (17).

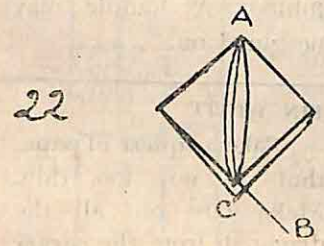
STEAMER



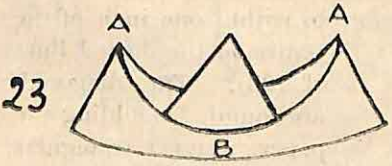
Fold a square of paper once on each of the dotted lines shown in (18) so that you have a small square of four thicknesses, as in (19).



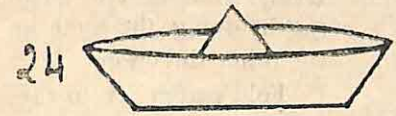
Fold back the loose corner A of one sheet, on the dotted line as shown in (20). Turn the square over and fold the remaining three sheets together, as in (21).



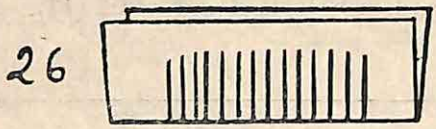
Open the triangle and bring points B and C together as in (22).

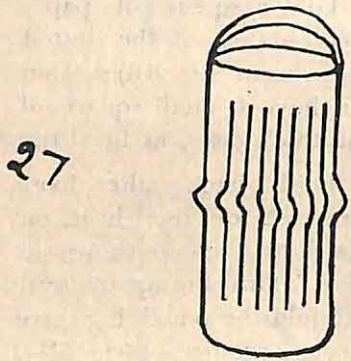


Pull out to both sides at point A, letting B and C bend out and up, as in (23).



Complete pulling out A and crease along bottom to keep the shape. (24) shows the finished steamer.



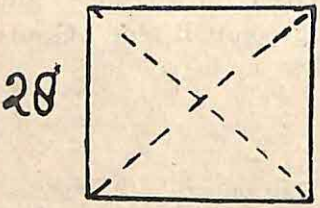


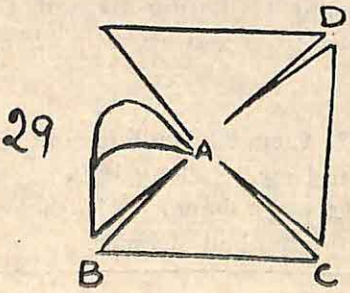
LANTERN

Fold a rectangle (10" x 6" is a good size) in half the long way, as in (25).

The first few times this object is made, draw lines for the children to cut, as in (26). Later, they can draw the lines themselves or cut free-hand. Warn them that cuts must not come close to any edge.

Open the paper and gum together two sides so that the cuts run vertically. Squash it a bit so that the paper opens slightly where it had been folded. A handle may be glued on.

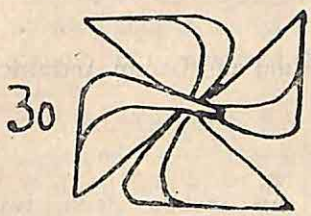




PIN WHEEL

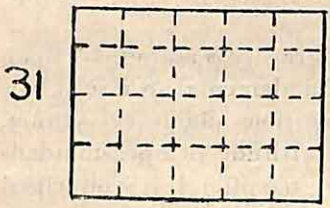
Take a square of paper that is not too thin. Make cuts on all the diagonals from the corner to within one inch of the centre on the dotted lines of (28). (The diagonals are found by folding the paper into triangular form, creasing and opening it; doing the same in the other direction.)

Fold corner A to the centre, then corners B, C, D,



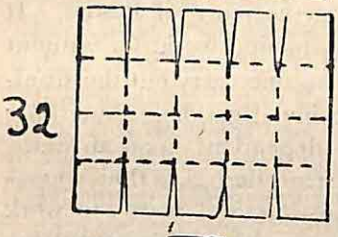
as in (29). One side of each section of the paper will thus be at the centre, as in (30).

Make sure that the corners meeting at the centre overlap. Fasten them firmly with gum. Have ready a thin stick like bamboo to push through the centre. Wrap several thicknesses of thread or string around the stick on both sides of the pinwheel, to hold it in place.

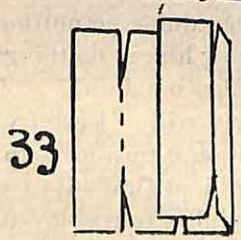


BOX

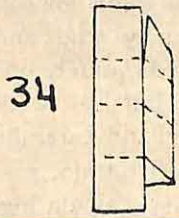
Take a square of fairly thick paper (4" x 5"). Crease it in half, then in half again, as in (31), and open. In the other direction, crease it into 5 sections by making four creases.



Make four short cuts at each end, as in (32).



Fold on all the dotted lines, as in (33), so that each section makes a square corner (90 degree angle) with the section next to it, (34).



Fold in the cut ends, and gum the top end piece to the one just under it. If you wish to put something in the box, do so before closing the second end.

Science and Social Studies

This section refers to both Individual and Group Activities since they are closely related.

PURPOSE

The activities discussed under this section serve two major purposes in the Pre-Primary School. The first is the development of "scientific" habits of thinking and working, and the second is increased understanding of the environment and of man's relations to other men and to the environment.

Habits of thinking and working :- Curiosity is an outlook upon life fundamental to childhood and fundamental to a scientific outlook. The young child asks questions about everything, wants to touch, taste, smell. This attitude of open-mindedness and wonder is to be encouraged ; too often it is soon wiped out by impatient adults or rigid memorizing of lessons. It is fundamental to science and to any mental work, for without keen curiosity to sustain one, how can one carry out the disciplined study necessary to scientific investigations or anything else? Children can easily become dependent upon an authority to give them answers. It is instead desirable that wherever possible they seek their own answers and learn to work independently. The first step in this is the adult's permitting the child to do things for himself, encouraging him to do things for himself. Then the child will cry out, "Let me do it!" "I can do it myself !" "Don't help me !" and will at least try. When he is really stuck, he will recognize it, and turn for help. With such behaviour the desire of the child to find his own solutions is firmly established. But the adult's responsibility has only just begun : the young child has few skills for solving problems. At certain levels he can do so : by trial and error he will discover that blocks must be placed squarely one on top of the other if the tower is to stand. But he needs many more and more complicated skills, slowly and carefully taught by the adults. There are skills ofobser vation, reasoning, as well as the traditional reading, writing, calculating.

"If you do this, then what will happen?" is a scientific habit of mind taught equally well during a fight on the playground as during a demonstration of heating water to make steam.

Scientific method is a procedure which can become an ingrained habit through repeated experience in a wide variety of situations, some of which are about science and some of which are not. Briefly, it can be described as Observe, Guess, Test, Observe, Conclude. For example, children notice that the clay they are working with is very dry. They speculate about what to do. "Let's put it in the sun." "Let's play with it more." "Let's add water." They try each of these suggestions in turn, observing what happens to the clay under the given conditions. They then conclude that dry clay needs more water to have a consistency good for working.

Understanding the environment:— This occurs on two levels, information or a series of facts, and a conceptual, integrated series of relationships. Both are necessary. Facts as such have little meaning by themselves. Children may learn that the root of the plant is the part in the ground and the stem is the upright part and the flat, green parts are called leaves. But this does not carry them very far. Unless they realize the functions of each part and the integrated system whereby a plant gets food and light and can live, which is possible, in a simple way, their knowledge about plants is extremely restricted. Further, they can be helped to see that plants are only one kind of living things, through very direct comparisons of plant, animal, human needs.

There are certain big ideas that tie together many experiences and concepts, known as "*Key Concepts.*" Some key concepts that are relevant to the Pre-Primary School are :

Change :- All living things grow. They will need food, light and protection in order to grow. There is a cycle of growth for each living thing. A living thing changes its appearance as it grows, while remaining itself.

	-Inorganic change: change of state. -Man may make changes in his environment. Man has made machines to help him.
Interaction of Parts :-	Ecology, i.e. relation of organic or inorganic thing to its environment. -Relation of exterior and interior of objects. -Human interdependence: each person does his work which helps all others. Society functions by cooperation.
Scientific Method :-	Observe, guess, test, observe, conclude.
Logical Thinking :-	-Ability to categorize and generalise. -Flexibility in categorizing. -Relativity of categories, depending on the point of reference. -Common terms, like wind, square, liquid, blue, etc.

These concepts are never presented to the children in these terms, but in day-to-day activities and in group lessons children gradually become aware of them.

Science and Social Studies Learnings in otherActivities

Be aware of the science and social studies learnings present in all the activities the children do throughout the school day : in sand and water play, block play, painting, etc., and encourage them to experiment and to speculate further than they would do on their own. This means being present and observing in all activities including recess and free play. When a child is pouring dry sand through a funnel, you might ask "What happens if you pour wet sand through?", encouraging him to make a test, then observe and compare. Other children will have done this "experiment" already and more will stand about eager to

try. Thus, by guessing, testing, observing the child also unconsciously is practising scientific method, and by constant repetition this will gradually become a habit. Such experiences are extremely important as a foundation for later verbal concept formation and sound understanding. When two children want to make block aeroplanes, it can be suggested that they build together to create an airport, instilling the advantage of cooperation. Always be aware of the potentialities for teaching concepts and do not be afraid to step in in an informal way, without taking over the games. Mutual assistance and role-playing, coming to understand the work of adults in the society, analysis and expression of emotions, are social studies concepts developed in all Child- Directed Activities.

SAND

Properties of wet vs, dry sand, properties of adding differing amounts of water to sand.
What can be made from wet sand, dry sand?
Weight of dry sand, differing degrees of wetness in sand.
Pouring dry or wet sand through funnel or pipe.

WATER

Pouring water through different things, like pipe, seive, pitcher.
What floats? Why?
What dissolves? What settles on the bottom?
Blowing water. Water flows down. Water in sand.
Getting clothes wet, washing clothes, putting to dry (evaporation).

BLOCKS

Spanning space, estimating size.
Steadiness necessary for high building.
Mathematical proportion : two 3 inch blocks equal one six inch one etc.

BALANCE :

Weight : Compare heavier, lighter.
Length : Compare longer, shorter, bigger, smaller.

Counting blocks.
Use of wedge, level.
Inertia : at what angle one block will slide down another?

PAINTING AND DRAWING :

Colour changes with different amounts of water.
Mixing colours wet and on paper.
Painting or drawing geometric shapes.
Painting or drawing experiences.
Colour changes with intensity of crayon pressure.

CLAY :

Properties of dry clay.
What happens when we add different amounts of water?
What happens when we use stick or other tool, different ways to use.
Make shapes or objects.

PAPER WORK :

Colours, compare shades.
Compare types of papers.
Counting.
Precise working.

MISCELLANEOUS :

Trips.
Walks.

(And every teacher will notice so many others coming up in her class. Please note them under the appropriate heading. This list is meant to suggest ideas, and not to be complete in any way.)

Science and Social Studies Syllabus

The emphasis in the present Programme is upon Science. Social Studies has been intergrated within the Science frame-work since it is felt that children's fundamental need is to

handle objects which they can then talk and generalize about, and both Science and Social Studies concepts can be derived from the direct experiences to be described.

METHOD :

GENERAL

1. Some materials are such that the first presentation should be to the entire class : the magnifying glass is one, since it is delicate and difficult to focus correctly, magnets are another, and their uses need to be demonstrated and discussed.

For these materials, assemble children during Teacher-Directed Group Activity period, seating children in a circle with yourself as part of it but a little higher. Hold up the object or objects to be introduced so that all can see. Pass the object or objects around the circle, giving it to the child next to you and asking him to look at it, feel it, pass it on. If there are two objects to be inspected, pass from two sides simultaneously, and if there are more than two, as soon as the nearest child has finished, give him the next object to observe. In this way, more children will be occupied and the class is less likely to become restless. Every child should have as long as he really needs to inspect ; some will need to be hurried along a bit while others will have to be encouraged to look carefully. While holding the object some children will say its name and use. After all objects have gone all the way around hold up each in turn, ask its name or tell it if no child knows and all discuss the use. It is also a useful exercise to ask children to describe the object—its shape, colour, size, weight, texture—so that they notice more carefully and also build a vocabulary. For some objects, it will be appropriate for children to again handle the objects right then and there ; this will partly depend upon the attention span of the group. All materials should then be available later for children to inspect and handle individually. Tell the children when and where the material will be available for them to use, and how they should use it. If it is seeds, for example, say that they will be available in the Sorting Box during the next work period,

and that then a few children at a time can examine and sort them, by size or colour or shape or use.

2. Some demonstration lessons with a whole class will also be necessary in introducing or clarifying a concept or in pulling together children's observations. This is advisable when looking at seedlings, to note parts of the plant and growth needs, to discuss the work of gardener or doctor and is indicated at several points in the Human Physiology unit.

For a demonstration, children generally sit in a group, in lines close together, facing you. The attention of all is supposed to be on what you do or what a child does who is acting as leader or demonstrator, also in front of the group. Some teachers will also find it desirable to seat children in a three-quarter circle for some demonstrations, leaving room for the apparatus and demonstrator on one side ; this has the advantage of keeping children at a distance, yet all being equidistant, and is a useful arrangement for any slightly dangerous equipment like stove in cooking demonstrations.

In a demonstration, show the process, ask children questions that will make them observe more carefully and reason. This must be done while things are going on and not afterwards, since children should observe the actual thing and cannot be expected to recall. Repeat the demonstration if necessary, perhaps with a child as teacher.

Explanations and discussions should be a give and take among children and teacher, not a lecture. Ask questions, accept whatever answers are given, looking for clues as to what children really understand, using their own phrases as cornerstones to build from known to unknown. Always ask, "How do you know?" to check sources of information and encourage children to look at things themselves for their answers. Some actual examples are given in the Human Physiology unit.

Demonstrations and discussions must always be preceded and/or followed by extensive individual chances to handle things and observe personally. There should be constant reinforcement between Group and Individual Activities.

3. Some materials, like rope loops for sorting, should be explained to children individually or in groups of two or three,

by the teacher sitting with them as they work during Child-Directed Individual Activities. These are materials which may be more difficult to use or understand, and all children will not be ready for them at the same time. It is best to explain them when children who are interested have the time to use them extensively. A class explanation would go over the heads of most. Repeated explanations are likely to be necessary.

4. Most materials should simply be made available to children during Child-Directed Individual Activities, and they be encouraged to try and see what they can do. Some children will require a suggestion or two from the teacher or even to be taken to the Science corner and shown that a material is there, since they do not have the kinds of interests that would take them there alone. But once started, these children also will find many original ways of working. Geometric shapes and picture cards should be played with fully. Children will automatically say the names and ask each other, will set them out in groups and patterns. Later you may make some suggestive comments or ask questions to set a child off in a wholly new direction. Also teach specific games to sharpen skills and observation power and encourage cooperation. This is discussed in great detail in the section on Sorting.

5. Make materials easily available in an organized way (in Science Activity Box, in special corner of the room, on a special shelf). The place should be clearly defined. The order should be shown and explained to the children. They will then be able to get materials for themselves and to take responsibility for returning them. They will feel free to experiment. Check every day before the next day's work to be sure that all pieces are there, in the proper places.

6. Time should be arranged so that children have ample opportunity to manipulate material alone or in small groups. This means having materials ready every day, providing a period when children may use them over and over again. Materials should be available long enough for all children to use them. New ones should be added as the brighter students have done all they can with what there is and are ready to go

ahead. Materials which are no longer used by anyone should be removed; they may be returned at a later date, and after an absence seem new and be explored at a new level of understanding.

7. Encourage independent work habits. Explain and discuss either with the whole class or with a few children or with only one child. Then leave the children alone during Child-Directed Individual Activities to experiment and work things out on their own. Observe them (preferably from a distance, perhaps while writing names on drawing papers or some such mechanical task), and step in only when a child is stuck to the extent that he can not go on alone or is mechanically repeating the same action, and then step in with a question or suggestion, not with an answer, or the whole process of education is defeated in that instant.

8. Stress scientific method: Observe, guess, test, observe, conclude—and follow it yourself. This means that you must be objective, notice carefully, be willing to say "I don't know" and in collaboration with the children seek a method for finding an answer. It is a pervasive attitude of mind that will find its way into all aspects of school life for the teacher who has it, and so will permeate to the children. It will not come across at all if the teacher does not possess it. The section on teachers' role discusses scientific method, in the wide context of its use throughout the school's activities.

Be systematic in making observations. If an activity continues over a period of time, like planting, then be sure to remind the children to observe the plants every day, if they do not remember themselves. Only in this way will they develop habits of careful observation.

9. Experience first should be direct, supplemented by indirect experience through pictures, books, adult comments and explanations.

10. Tie in trips outside of school and visitors to school whenever possible, to give real experience and broaden horizons.

11. Key concepts should be borne in mind at all times and referred to over again in different contexts, wherever relevant,

pointing out significant relationships by the manner of questioning or giving information, using the children's remarks and observation. This is discussed above under Purpose.

Constantly refer from particulars to concepts and back again: when children observe the plant which had earth and light but no water, you can ask "What would happen to you if you had no water?"

Child: I'd be thirsty.
Child: I'd drink milk.
Child: I'd die, too.

You can also ask how we feel on very hot days, or about animals, thus leading to the generalization (concept) that all living things require water to live. When each child cares for his own plant, remind him of the discussion, that he wants water and so does the plant, so don't forget to water it a little every day.

12. Emphasis should always be on each child's own experience and way of saying what he knows. Do not give ready-made answers nor expect pat replies. Children touch and do things, themselves describe and summarize. Guide and fill in gaps, but do not lecture. Only ask children to recite fixed answers to learn names of objects: otherwise, children give their own interpretations.

In the syllabus itself, MATERIALS are given under each unit heading, for the entire unit. Each unit is then divided into topics, and METHOD is described for each topic, for Group and for Individual Activities. The given sequence will build skills of observation and concepts developmentally. All Group Activities for each topic are described first, since there generally must be group presentation of materials or ideas. The sequence of Group Activities should be as described, but any one lesson may be repeated more than once, perhaps several times, with slight variations. Be willing to repeat lessons, to make sure that children understand, but not to the point of becoming mechanical and boring. As in all else, the teacher's sensitivity to the children is critical.

Individual Activities are described after Group Activities, but the first Individual Activity may actually precede the first Group Activity or come the very next day. Exactly when to introduce the new is up to the teacher, but do not pace them too slowly. The two types of activities should be closely related throughout.

Sample dialogues are given under METHOD, to indicate the types of questions to ask, how to elicit information without giving answers. They are meant only as samples, and there will naturally be much more talk than is indicated. Similarly, you will think of many more questions for discussion than those suggested in the text. Where necessary, the basic facts to answer the teacher's questions are given in the right-hand margin. Knowing these facts are necessary for the teacher to be able to ask provocative questions. Further background, however, is essential.

Have all materials for group lessons ready before school starts on that day. Collecting them just before the class begins is not adequate, since it will take class time, children will become restless while waiting, and you may find that you do not have everything which is necessary.

Unit I: Plants

July—August.

This unit is chosen at this time because it is so easily observable during monsoon season.

MATERIALS

1. Variety of seeds, including mug or methi or another fast sprouting seed, plus val.
2. A few pebbles.
3. Small dishes to keep seeds and pebbles.
4. Magnifying glass: at least 1, preferably more.
5. Seven or more jars or tins for planting.
6. Enough baskets for each child to have one.
7. Earth, water.
8. Cellotape or thread.

TOPICS AND METHOD

1. *What is a seed?*

GROUP:

A. Sitting in a circle, show children different seeds and pebbles, in small dishes. They are passed around so that children can feel and look closely.
Teacher: What are these?
Child: Seeds.
Child: Pebbles.
Teacher: What is a seed?

THAT FROM WHICH A PLANT CAN GROW.

Child: For growing plants.
Child: For eating.
Child: For cooking.
Teacher: Are all of these things seeds?

Some children will say yes, some will say no.
Teacher: If they are not all seeds, how can you tell which are not?

BY PLANTING

Child: Feel them.
Child: Eat them.
Child: Look at them.

Let children try these different tests, and they will see if they can discriminate between seeds and not seeds. If no child has suggested planting, then suggest it. They can then take a sample of each kind of seed and pebble and plant it, labelling the tin by attaching another seed or pebble to the outside, either by cellotape or in a paper and tied around with thread. All tins should have equal earth, light, water.

B. The tins should be observed every day. In Group Activities period, ask the children to notice the changes

in each tin, for four or five days. They can then say which are seeds, since plants grow from them. If there have been some failures, children will say that those are not seeds, since no plants grow. That is true from their point of view, and can remain for the present.

C. The magnifying glass should be introduced. It can be passed around the class, asking children to feel it and look at it. When it has been returned to you, ask children to describe it (by feel, colour, shape). Then ask children what it is and how it is used. Some will have been doing this when it was in their hands, but now you can explain for the entire group. Also warn them to be careful, for it is glass and can easily break. Give some instruction and demonstration on how to focus properly. Then each child may have a chance to look at seeds and pebbles through the glass.

D. One or two days before this demonstration, put val to soak in a dish of water, so that for the demonstration some sprouts will be available.
Teacher: What is inside a seed?

SPROUT AND FOOD FOR IT

Child: Nothing.
Child: Seed.
Teacher: Let's cut some open and find out. Here are some seeds that I have soaked in water. How are they different from the dry seeds? Show dry val in a dish next to the sprouting val. Children will notice differences in size, hardness (after they touch). Then cut open a few soaked seeds and pass them around the class. Children will speak out their observations as they look. They may use a magnifying glass. Perhaps you can draw a sprouted seed on the blackboard, as it looks in the dish, and explain that this is a baby plant, and the round part making up most of the seed is its food. Show the root and stem if both are actually present, or tell the class that they will cut more open and observe again the next day and the next,

to see how the plant looks as it grows. The same procedure can be repeated each day, until the food sections are gone. Be sure to follow through from one day to the next.

INDIVIDUAL :

A. Make seeds and pebbles available for sorting in the Science Box (see below, Unit II, for details of presentation). Children can feel the seeds and pebbles, learn the names, sort by size, shape, colour, smoothness.

B. Once the magnifying glass has been introduced, it can also be available for examining seeds and pebbles, and anything else that children want to use it for.

2. *What does a seed need to grow?*

EARTH, WATER, LIGHT, PROTECTION

GROUP :

A. Have ready six jars or tins, mug in a dish, and containers with earth and sand. Ask children what these piles are, what they are for. Ask what else a plant might need to grow. Have cups ready for a few children to fetch water. Children may not think of light and protection as requirements for a plant; if they do not, then suggest them, as follows :

Teacher : Where do most plants grow?
Child : Outside.
Child : In the garden.
Teacher : What is there outside that plants need?
Child : Air.
Child : Wind.
Teacher : Yes, and the sun shines outside. What comes from the sun?
Child : Hot.
Teacher : Yes, and light, too. Isn't it light in the daytime, when the sun is shining?
Teacher : There is something else that plants need in order to grow. Why do we put a fence around the garden?

Child: To keep out animals.
Teacher: Yes, we must protect the plants from anything that might eat them or they will not be able to grow. Children also need protection and help in order to grow. How are they protected? Who helps them?
Announce that the class will do an "experiment" to see what seeds need to grow into plants. Define "experiment": We want to see if what we think is true or not. We think certain things—earth, water, light, protection—are needed for a seed to grow, and want to see if this is right. So we see what happens if we have each of these things and what happens if we don't.

Prepare the tins with mug and:
1. Earth, water, light.
2. Sand, water, light.
3. Earth, no water, light.
4. Earth, water, no light.
5. Earth, water, light, outdoors in a place open to animals.
6. Earth, water, light—with no mug but a pebble.

Having light means keeping tin in a sunny or light spot, no light means inside a dark cupboard. Label all tins correctly. Put them in their places. Observe every day for four days, making sure to also water those tins which are supposed to have it.

QUESTIONS FOR DISCUSSION

Which plants look healthiest? What happened in the sand? Dig up seeds to see. What happened when there was no water? Again dig up seeds to see. What happened to the plant outside, unprotected. What happened to the plants in the cupboard? Do they look healthy? What is different about them?

INDIVIDUAL:

A. Encourage children to observe the exprimental plants,

to discuss among themselves what they observe, and other plants that they know.

3. *What are the parts of a plant?*

GROUP :

A. Each child plants mug in a small basket with earth, keeps it in a light place, waters it daily; show children how to pour only a little water into their plants by dipping one hand into a jug of water and pouring the "handful" at a time, in drops, over the plant. Label each child's basket with his name. Each day following the first, for five days, observe the growth. Encourage children to describe what they see in terms of colour, shape, size, number, and to compare that with what they saw on the previous day. Each day a few sprouts can be taken out of a different child's basket, to see growth from day to day.

QUESTIONS FOR DISCUSSION

Which part of the plant grows up? How does it help the plant? Which part of the plant grows down? Why does it grow down? How does it help the plant? How do root and stem look different (in colour, shape, size)? It will be possible to observe roots coming through the bottom of the basket. What are these? How is it you can see them? (This is an exciting discovery).
Let each child take his basket home.

B. If possible, planting and caring for school garden is an excellent learning experience. Systematic care of the garden not only teaches science, but develops a sense of responsibility, habits of daily routine and remembering, respect for work with the hands, muscular development, group cooperation.

C. There could be a group discussion of the work of the farmer and gardener, including the sequence from sowing to reaping and the tools used at different stages. Show the pictures from the charts. Emphasize how the farmer and gardener are our helpers. Visit a field or garden when the farmer or gardener is there.

INDIVIDUAL :

Water plants, observe and comment upon changes that they see. Children may be encouraged to draw or paint sprouts, to make them of clay. If there are any books about plants, this is a good time to sit and read them with a few children at a time, asking them to observe and find the stem and root, to notice similarities and differences among different plants. Sort and arrange pictures showing sequence of planting and tools needed.

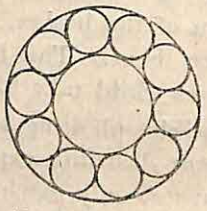
Unit II : Logical Thinking

August-April

Noticing similarities and differences and categorizing (sorting). Emphasis is on observation and systematic procedures.

MATERIALS

1. Fixed set of buttons of the same shape, in three different colours, each in 3 different sizes, at least six of each.
2. Random set of buttons, about 50. Anything that can be found, as varied as possible.
3. Seeds and pebbles.
4. Assorted small materials.
5. Sorting dishes : large tali (12" diam.) holding 10 small dishes (1/2" diam.) and one small tali (4" diam.).



6. Set of strawboard triangles (isosceles), circles, squares, approximately 3", painted in a variety of colours, with several of each shape in each colour. (*See* Supplementary Notes 4, Teacher-Prepared Teaching Aids).
7. Sets of pictures from charts. Each chart is cut into its separate pictures, and each picture is pasted on a separate card 3" x 5". In this way children can handle and sort the pictures freely. The following sets are recommended : vegetables, fruits, birds, animals tame

and wild, transport, the process from sowing to harvesting, parts of the human body.
(*See* Supplementary Notes 4, Teacher Prepared Teaching Aids.)

8. 3 Rope pieces, 1/2" thick, 2 feet long, in 3 bright colours.
9. Miscellaneous materials for Sensory Games, as described in that section.

TOPICS AND METHOD

1. *Sorting buttons*:

INDIVIDUAL:

A. Place the fixed set of buttons in the small tali of the Sorting Dishes, and that plus the small dishes in the large tali, and put the whole set ready in the Science Corner or Box. Simply make it available. Some children may go to it and immediately start to sort into the small dishes. If so, then other children will soon copy them.

If no one goes after a few days, then take one or two children whom you think will be interested, suggest to them that they separate the buttons into the small dishes, and watch to see how they do it.

At first make no further suggestions. Watch what the children do. Some will sort at random, others by colour, others by size, a few by size and colour. Only if a child is stuck at one stage for more than a week, suggest a new method to him. Teacher: (holding two blue buttons) "How are these buttons the same? Can you find any others like them? Put all the ones like these in one dish." Sit with him, praise him, encourage him to the next step if necessary.

B. When most children seem to have had enough of the fixed set of buttons, when it is no longer used very much each day, replace it by the random set in the Sorting Dishes. This may take a little more initial suggestion than the fixed set, but the procedure is the same: choosing two buttons, asking the child how they are alike and if

he can find others like them. Try this for a variety of properties, like colour, size, shape, number or size of holes, smoothness, design.

2. *Sorting seeds and pebbles*:

INDIVIDUAL:

A. This is to be done while seeds are being examined in Unit I, Topic 1, "What is a seed?", and continued as long as interest lasts. It may come between the two sets of buttons described above. Put an assortment of seeds and pebbles in the Sorting Dishes. Method is the same as described for buttons, although name and use will enter a discussion.

3. *Sorting geometric shapes*: triangles, circles, squares.

GROUP:

These shapes may be introduced in a class discussion, but it is not necessary and depends upon your interest and estimation of children's ability to perceive similarities and differences: can they recognize which pieces have the same colour and which pieces have the same shape, even without telling the names? If the group as a whole is fairly good at sorting the random set of buttons, then a group presentation of the geometric shapes is not essential.

A. But if you do want to present to the group, then start with colour matching as this is the quality with which children are most familiar. Sitting in a circle, spread the pieces out on the floor in front of you, in a random order. Hold up one piece, suppose red, and ask a child to show another piece of the same colour. Call on a volunteer to come and give it. Ask children if they know the name of the colour; if not, then tell them. Place both pieces together, apart from the others. Ask for another volunteer to put another red piece with the first two. Proceed the same way until there are no red pieces left. Then ask if they see any more red pieces. Proceed the same way with other colours, as long as the children's interest lasts. Tell the children that

these pieces will be kept in a box in the science corne and they can play with them during Individual Activities period. Such a lesson may be repeated a few times.

B. A similar procedure can be followed in presenting sorting by shape. It is generally a good idea to start with the round shape, since this is most familiar to children. After the shape has been matched once, ask children its name. Also ask what other things they can think of that are round, so that they focus on the property of shape regardless of other properties of the object. Children can draw circles in the air and on the floor with their fingers.
The next shape should be the square. Children are less likely to know the name.
Teacher : How many sides has a square? Pass squares around the class so that children can trace around the edge with their fingers, feel and count for themselves the four sides.
Teacher : How many corners has a square ?
Demonstrate the technique of holding the piece with the left hand ; the position of the left hand will tell them where they started and they will not count around the piece more than once. Ask what things they can think of that are square. They will probably not distinguish between square and rectangular shapes, and that distinction need not be made at this point.
Triangular shape is usually unfamiliar. The same procedure should be followed.

C. Later, one piece of each of the shapes can be laid out before the group, for comparing the shapes.

QUESTIONS FOR DISCUSSION

Which shape has the most sides?
Which shape has the most corners?
Which shape has no corners?

INDIVIDUAL

A. Put all the geometric shapes used in class in a box in the Science corner. Children may work alone or in a small

group. Some will sort according to shape or colour, some will sort according to both characteristics. Some will put the pieces together in designs, fitting triangular shapes together or setting out long lines in various ways ; imagination and inventiveness have full scope.

B. Teach matching games to two or three children at a time. All shapes are divided equally, at random, among the children playing.

a. One child sets a piece in front of him. Each of the others, in turn, sets in front of himself a piece that he has which is the same colour.
Then the child to the leader's right sets out one of his pieces, and others match it, in turn. If a child has no matching piece, he puts nothing. Each child is leader in turn. The first to use up all his pieces is winner.

b. The game can be played by matching according to shape or according to shape and colour, i.e. blue triangle or red square.

c. The leader takes two pieces, puts one on top of the other. The pair must be matched by the other players.

d. One child acts as leader. He calls out "Blue", and all other players must put a blue shape in front of them. The first to do so becomes leader for the next round.

e. The same game may be played by calling the names of the shapes, or by calling colour and shape.

f. Try to think of other games. Those given are only suggestions and many games are possible.

4. *Sorting Pictures* :

GROUP :

During the time that the different picture sets are available for sorting during Individual Activities, take some time during Group Activities to discuss them.

A. Vegetables. Show pictures, ask children the name of each vegetable, or tell them if they do not know.

QUESTIONS FOR DISCUSSION

Which does your mother cook? How does she cook it? Do

you like it? Which do you eat without cooking? Where do they grow? What part of the plant is it? Where do we get our vegetables? Where does the vegetable-seller get the vegetables? How do they get from farm to market? Visit the Vegetable and Fruit market.

Bring in real vegetables. Let children identify them and match real vegetables with pictures. (They will recognize that some of the pictures are not accurate representations.) Cut the vegetables, see how they look inside and outside, noting differences of colour, texture, softness or hardness, if there is water or not. Note the seeds; if any. Taste and smell raw vegetables. Cook them if possible, and smell and eat.

B. Fruits. Follow the same procedure. Some fruits are likely to be unfamiliar.

C. Animals.

a. Show pictures of tame animals, ask children the names or tell them if they do not know.

QUESTIONS FOR DISCUSSION

Are the young like their parents? How are they alike or different? What are the names of the babies of each? What does each eat? Where does it live? How does each help people? Also point out differences in colour, size, characteristics such as long or short ears, horns, long or short tail, fur or short hair. What is special about the appearance of each animal (its chief characteristics) ?

b. Show pictures of wild animals. Follow same procedures as for tame.

QUESTIONS FOR DISCUSSION

Compare tame and wild animals : in what way are all the tame animals alike? In what way are all the wild animals alike?

Visit a zoo if possible.

D. Birds.

Follow the same procedure.

Compare animals and birds: how are they the same? (need food, protection while young). How are they different?

E. Transport :

QUESTIONS FOR DISCUSSION

Which have wheels? Which go on land, on water, in air? Put the pictures in order from fastest to slowest, from slowest to fastest. Which do we see in our town? Which have you gone in? Which have an engine? What makes the others go? For what do people use them?

INDIVIDUAL :

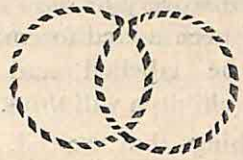
A. Two or three children sit together and say the names as one child puts down each card.

B. Pictures can be sorted by one or more children, according to a variety of characteristics. Generally, this takes some suggestion from the teacher to get started.
   a. Vegetables: Sort by those eaten raw or cooked, by colour, by shape, by rough or smooth skin, by part of the plant, by one seed or many, etc.
   b. Fruits: Similarly.
   c. Vegetables and fruits together: Sort according to which are vegetables and which fruits, also according to above categories, and others you or children may think of.
   d. Tame animals : Sort by size, colour, use to man, horns or not, long or short legs, etc.
   e. Wild animals: Similarly.
   f. Tame and wild animals : Sort according to which are tame and which are wild, also according to above categories.
   g. Transport: Sort as suggested under Group Activities.

C. Introduce rope loops.
   a. Start with only two. Set them on the floor or table to make two circles, and children sort pictures into them. By use of the ropes, sets become more clear

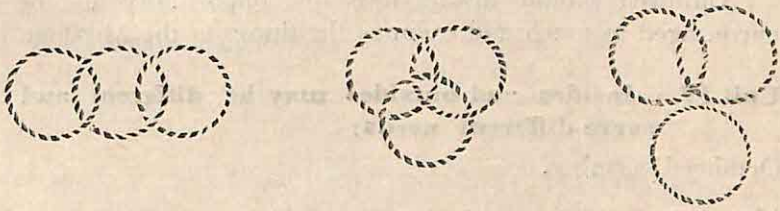
visually. If interest in sorting pictures has been lagging, it will be revived when this new and more difficult element is added. This is also a clear

introduction to sets in mathematics (see Section on Numbers). The two loops can be overlapped, for example, to show the set of vegetables eaten raw, those eaten cooked, those eaten raw and cooked.



b. Use three ropes. These can be set out as three separate groups, the easiest to begin with.

Then overlapping can be introduced, for example,



those animals that go on land, those in water, those in the air, those in all these places.

Unit III. Collections

MATERIALS

Miscellaneous materials as indicated below.

TOPICS AND METHOD:

INDIVIDUAL AND GROUP

Simultaneously with Unit II, i. e. from August and continuing for the rest of the school year, make collections of different types of objects, according to a great variety of categories, as suggested below. For example, make collection of round objects when you introduce the round shape. Keep one special place in the classroom or one room in the school as "Museum". These collections should be developed and added to by the children, new ones begun whenever the children make a new discovery or show interest, or when you see that nothing has been added for more than two weeks. Collections should be labelled and neatly organized. Suggested collections (children will think of hundreds more):

1. by colour, i. e. things that are red.
2. by shape.
3. shiny vs.dull.
4. rough vs.smooth, bristly.
5. bottles.
6. things to write with.
7. things that cut.
8. things that hold liquid.
9. kinds of cloth.
10. things a magnet can pickup (Introduce magnet first.)

Children should always have the opportunity and be encouraged to touch and examine the things in the Museum.

Unit IV : Insides and outsides may be different and serve different needs:

October-December.

MATERIALS

1. Small bag.

2. Miscellaneous items from the classroom and outside.
3. Many empty match boxes.
4. Miscellaneous items to show difference in insides and outsides, as indicated below.

TOPICS AND METHODS

GROUP :

A. Bring a "treasure bag" with common school objects inside. Keep the bag tied and ask children to guess what is inside by feeling. Later show what is inside.

B. Bring several match boxes. How does one look outside? Children describe its size, shape, colour, feel, smell. Can you feel what is inside? Have some with matches, some with pebbles, cotton, paper ,etc. Have children shake and see if they can guess what is inside each. From looking at the outside we may not know what is inside.

C. Bring many things where outside and inside are different, e.g. pillow, letter, mechanical toys, etc. Show and discuss.

D. Examine actual fruits and vegetables as discussed under Unit II, Logical Thinking. Use pictures from charts.

E. Visit a garage that repairs cars to look at car's inside, if possible.

INDIVIDUAL :

The same materials used in Group Activities can be put in the Science corner for children to handle, examine, and discuss themselves.

Unit V : Human Physiology :

January-April

PURPOSE

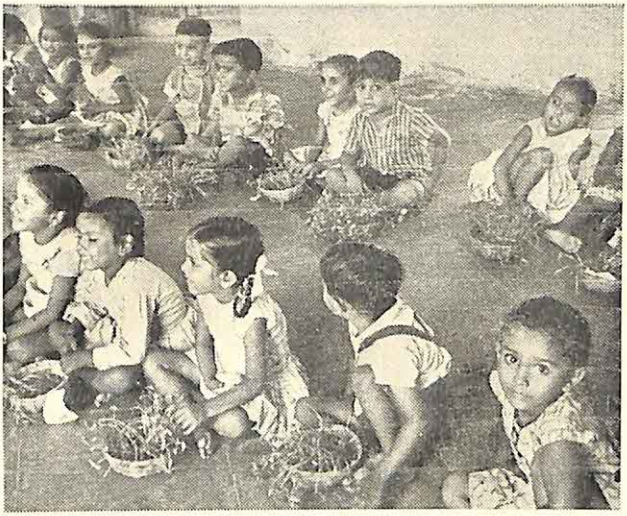
The study of the human body is chosen for psychological as well as intellectual reasons. Children of this age are becoming very aware of themselves as individuals and of all their

body parts. They are curious, and also a little afraid. They worry terribly when they get a cut or when they see a person on the street with some defect. They are often afraid of the doctor and of the injections that he gives. It would be a help to them if they could begin to be objective about themselves, and to realize that every one is made the same way and everyone has the same fears. Since these are four and five year olds, the methods used must be very simple and graphic, and one can only expect beginnings of awareness and observation.

All teachers will not do all the activities suggested, but it would certainly be possible to do them all within a few month's period. In addition to an understanding of their own bodies, they aim to expose children to a way of thinking that relates many things in the world to each other, that indicates that one thing is not always the same but changes under certain conditions, that man can initiate a systematic process of change in raw materials. These are all fundamental concepts of science and social studies. Because the children's medium of communication is action and feeling rather than words, the concepts are not made explicit verbally but are introduced in experiences during which vocabulary is given. Thus the tools of having done something and of words will be readily with them at a later stage when a study in depth will be undertaken.

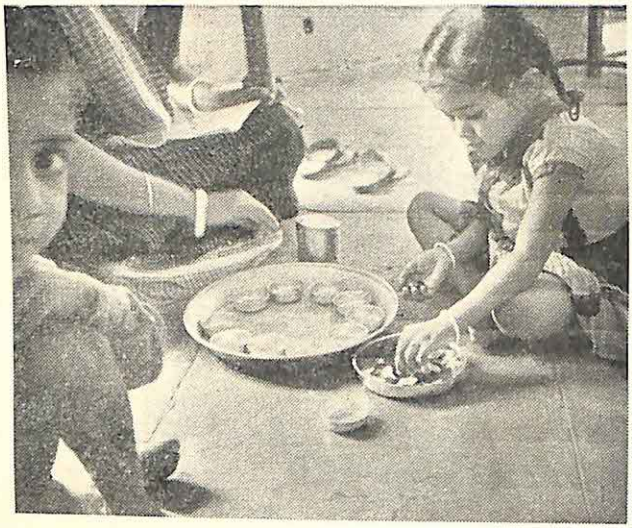
MATERIALS

1. Children themselves.
2. Three sheets of drawing paper at least as high as a child and the width of his outspread arms; may be prepared by gumming four sheets together.
3. Crayons.
4. Buttons, straws, soapy water, whistles, in sufficient quantity for all children.
5. Different foods, cooking vessels, stove.
6. Diagrams of the human body (*see* List of Materials).
7. Reference book on Physiology for teachers.
8. Reference book on Nutrition for teachers.



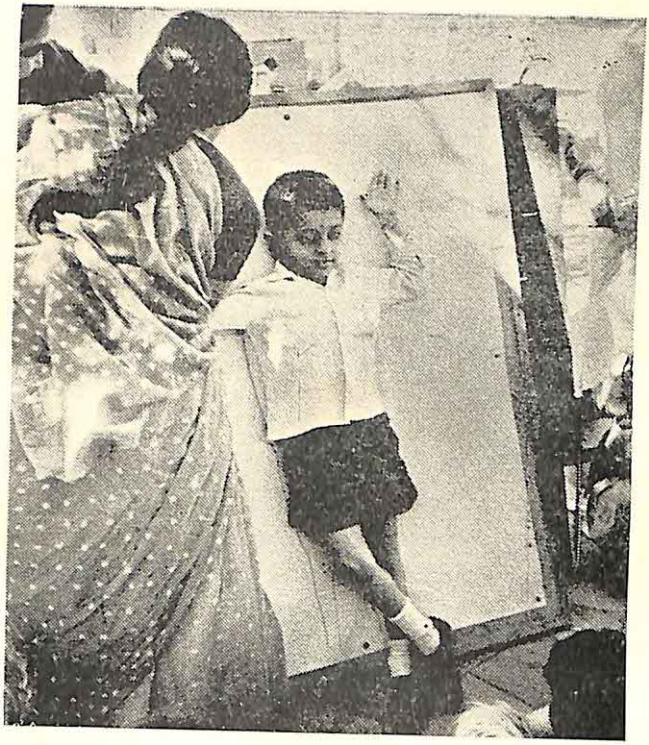
What are the parts of a plant ? (p. 85)

Planting and caring for school garden (p. 85)



Noting similarities and differences and categorising (p. 86)

Books with colourful pictures have a visual appeal to children (p. 102)



A large sheet of paper is tacked on a board, one child leans against it (p. 98)

Sand play can provide scope for growth in many areas (*p. 105*)

TOPICS AND METHOD

1. *Circulation*

GROUP :

A. Teacher : What happens when you cut your finger?
Child : It bleeds.
Teacher : And if you cut your knee?
Child : It bleeds.
Teacher : Why does it bleed?
Child : Because there is blood inside.
At this point, many children generally offer to show their wounds and scars, describe their experiences in being hurt, and the teacher and class listen to them all.

B. Teacher : When you cut yourself somewhere, and it bleeds where does the blood come from?
Child : Inside.
Child : From your foot (or whatever the hurt part is).
Teacher : Where is the blood inside?
Child : In your body.
Child : Everywhere in the body.
Show the veins that can easily be seen in wrist and feet, and explain that there are some pipes called veins that go everywhere in the body and that the blood is in those veins. The distinction between veins and arteries is not introduced at this point.

C. Teacher : What happens if you cut your hair?
Child : It does not bleed.
Teacher : Or if you cut your finger nails or toe nails?
Child : It does not bleed, of course.
All of these questions will not come up in one lesson, but should take three or four lessons to cover. Repetition is desirable.

D. In later lessons ask questions to develop awareness of the heart, ask the children to locate their own and each others' hearts, listen to the beat, feel the pulse in various places. Ask if they can think what the beat means. Describe the

function of the heart in pumping blood all through the body.

E. A large sheet of paper is tacked on a board or laid on the floor; one child leans against it, and his outline is drawn. Another child then locates the heart, draws it in, and another draws the blood vessels going all over the body (probably drawing red lines going all over the body). They may become very engrossed in the tiny lines of hands and feet, may ask questions about blood in the head or eyes. You may have to go over the lines afterward, to make them dark enough to see clearly.

F. At some point in the series of lessons, ask if the doctor ever helps you when you are hurt, perhaps picking up one child's description of going to the doctor when badly hurt. A group discussion on the doctor's work follows, with children sharing their experiences and fears. If possible, a doctor can come to school some time, tell the children what he does, show them his instruments, have them listen to the heart through the stethoscope.

2. *Respiration*

GROUP:

A. Introduce the topic and arouse children's curiosity, increase their perception, by having them do a simple experiment and reason about what they observe.
Teacher: Take a deep breath. What happens to your body?
Child: It gets bigger here (pointing to his chest).
Teacher: Why? What is inside?
Give children a chance to answer. If they don't;
Teacher: Two large bags called lungs fill with air, almost empty, fill, empty.
How does air get to your lungs and come out again?
Child: From my nose.

Teacher: How does it get from your nose way down into your lungs?

All children will want ample time to breathe deeply in and out.

B. Several other types of breathing experiences can be added. Children breathe deeply, see how long they can hold their breaths (using the counting they have learned), breathe hot and cold, feel the sizes of their chests when they inhale completely, compare it to that when they exhale completely. They breathe through their noses and through their mouths, through one nostril and through two.

QUESTIONS FOR DISCUSSION:

What does the balloon fill up with? Where does the air come from? What connection is there between taking in breath and the size of your chest? When you take a little breath or a deep breath?

Another large diagram is drawn.

The group lessons may be spread out over a week, repeated and enlarged upon three or four times. It is interesting to watch children during recess, breathing deeply and holding each other by the chest, or to hear a parent report that her child told her he has two bags inside his chest that get fillled up when he breathes, and demonstrated his new knowledge.

C. January, the season of kite-flying, is an appropriate time for the study of respiration. This enables you to relate the air that we breathe to the air all around, and to expand the study of air by noticing the wind: we do not see the air around us, but know its presence by the handkerchief blowing, the leaves and branches moving, feeling wind against our faces. All these things should be pointed out to children, by asking them how they know the wind is present.

INDIVIDUAL:

Give many opportunities to eel themselves and each other breathe, and to watch the movement of the chest.

Give opportunities to play with blowing (balloons, whistles soap bubbles) so that they may realize that air comes out of their bodies. This can be done at Water Play or in Recess. For blowing bubbles, it is better to have several small pots of soap water placed around the room, with a few children at each, than to have one large tub of water.

3. *Digestion and Excretion*

GROUP :

A. QUESTIONS FOR DISCUSSION :

What happens to the food that we eat? Do you like to eat? What do you like or not like to eat? What does your mother tell you that you should eat? What does the stomach do? What happens to the food the body does not need?

B. Depending on your resourcefulness, many concepts of nutrition can be introduced. It is best to consult a book on nutrition for your own background information. "Difierent foods help us in different ways" is rather abstract for this age group. It is preferable to simply show different groups of foods, like pulses, vegetables, milk and milk products, grouping different foods appropriately, asking children which ones they eat and how they are prepared in their homes. Depending on the facilities of the school, one could also study milk and its various products, make curds, cheese, butter, ice cream, see a cow being milked, look at and taste different kinds of milk (cow, buffalo, goat, camel). One could also see wheat from plant to flour, bringing a plant to school or visiting a field, visiting the miller's shop and grinding by hand at school, preparing rotla or purees or sukhdi at school. Look at pictures of sowing, watering, harvesting, available in charts. One could also cook a variety of foods to notice transformation of state, such as can be seen in cooking dal or gur. The amount of water present

in many vegetables can be seen when heating bhaji or tomatoes or squeezing watermelon.

C. How is the mouth connected to the stomach? How does the food get out of the stomach?
(Introduce a third large outline drawing).

D. QUESTIONS FOR DISCUSSION:
What do the teeth do? How can we take care of our teeth?
What makes strong teeth?
This can develop into lessons on the care of the teeth, demonstrations of brushing, description of the dentist and his work.

E. QUESTIONS FOR DISCUSSION:
What sort of things do we not eat? Why do we wash hands before eating? Why do we only eat with our right hands? From such discussions can come lessons on cleanliness and health habits, on pure water, and emphasis on the importance of such routines.

F. Show large diagrams of circulatory, respiratory, and digestive systems. Explain, aks children to find on themselves what they see in the diagrams. Hang the diagrams on the wall so children can look at them at their leisure, trace with their fingers if they like. Thus they gain another skill, that of recognizing and relating the visual symbol to the reality, essential to reading and understanding maps and diagrams.

4. *Skeleton*

GROUP:

A. Ask children to feel the hard parts under their skins, encourage them to feel in so many different places.

QUESTIONS FOR DISCUSSION:
What are those? Where are they in your body? What are they for? Do all animals have them? Do plants have them? How many bones do we have? Lots or few? Present a large chart of the human skeleton. Have

children locate particular bones on themselves and on the chart. They can realize that the skeleton is not one single big bone but many small ones fitted together. Hang the skeleton chart on the wall.

B. If possible, show pictures of skeletons of human, bird, different animals, frame of boat, frame of house. Go look at a house under construction to see frames for different parts.

BOOKS

Purpose

Books with colourful pictures have a visual appeal to children which is more effective than words, is more concrete and easier for children to understand. They are a transition between real experience and the further abstraction of a verbal explanation.

Picture-books and pictures are the first level of abstraction from real experience. They are not real, but only representations showing something else, either real or imaginary. Very young children, about two years of age, do not recognize this difierence and may want to take the pictured fruit out of the book to eat. How can they be expected to know the difference, except by repeated experience? We must not laugh at them or make fun, but patiently explain and show more and more pictures. This is the first step towards "reading", which can be defined as giving concrete meaning to abstract forms printed on a page. It is important in a child's development of pleasure in reading and reading for under-standing that he has opportunities to look at pictures at a young age.

Picture books reinforce a child's knowledge of what is around him, and expose him to many new things. His vocabulary increases rapidly as he learns the names of the pictured objects and tells the stories, his powers of observation improve as he looks for details and notices similarties and differences. He can learn to look from left to right, top to bottom of a picture which has many details, if the teacher

suggests this habit and asks him questions about the picture which he can only answer by looking in that way. The habit of sitting down quietly and looking at books helps in concentration and memory, as well as developing a love of reading.

MATERIALS

1. Minimum of 50 books for a class of 25 children.
2. Selection of books is critical.
   a. Subjects and scenes familiar to children, so they can relate reading and the printed abstraction with what they know in reality.
   b. A variety of subjects: animals, rhymes, objects in the home or school, vehicles, tales and myths, real people, topics of science, counting and alphabets in pictures.
   c. A few books about the unfamiliar, to expand their knowledge.
3. Tape or paper and gum for repairing torn books.

METHOD

Introducing the activity: Sit with a few children who have gone to the book corner, and show one or two books. Show how pages should be carefully turned and explain each picture or story. Repeatedly emphasize that care is to be taken while handling books. Books should never be carried around the room or taken near painting or clay, sand or water. It should also be dicusssed that snatching books from one another spoils the books and starts fighting among children. Books should be put away in their proper place when reading is finished.

Books should be kept on a low table or in Activity Box; the children can sit around the place, on low chairs or on the floor. A quiet corner of the room, with plenty of light, should be chosen. Books not in use can be stored in the teacher's cupboard.

Routine: Sit near the books and talk to an individual child about a book. Look at the pictures with him and ask questions to make him think and notice what is in the picture, such as

"How many boys are playing?" "What colour frock is the girl wearing?" "What do you think this man is doing?" "Have you ever seen an engine like that?" "Where do you think the boy was before we see him in the picture?" Children can also re-tell, from looking at the pictures, a story that you have read or told to the class while showing the book, during Story Time. If he makes a mistake, ask a question to help him observe and reason more carefully.

Do not bring out all books at once, but start with a varied assortment of ten books. New books should replace them on the average of every two weeks; interest in books decreases when the books get read over and over again for months. When books that have been read appear again after several months, they will be greeted as old friends and re-read, with more thoroughness and understanding.

Books should be repaired when necessary. Torn books should not be in the children's hands.

2. Child-Directed Group Activities

As for Individual Activities, during this period also children may choose one of three or four different activities. At the beginning of the hour, announce, or ask the children, what activities will be available. All activities may be possible, or if it is monsoon season or winter you and parents may prefer not to let children play with water, so that they will not catch cold. This reason for water not being available should be explained to the whole group; it may also be necessary for a child who has been ill or who catches cold easily to refrain from water play even though others can do so. In general, health precautions must take precedence.

Then let the children take the equipment to the areas for each kind of play. You are, for the most part, an observer during this peiod, and it is another excellent time for taking notes on individual children (*see* Supplementary Notes 6). You may be called upon to arbitrate a dispute, in which case try to hear both sides fairly and see if children

cannot make their own judgments of right and wrong. If two children argue frequently, suggest that they play with some one else for a while rather than fighting with each other.

You also move from group to group, noticing, encouraging, giving an informal demonstration lesson when children are engaged in something which indicates the beginning of a scientific or mathematical concept, and where your suggestion of an experiment or brief demonstration can carry their thinking further or clarify an idea. Illustrative suggestions are given under Science (page 70 ff.) and under each of the different activities in this section.

SAND PLAY

Purpose

Sand play is a reconstructive activity in which the child is given almost unlimited freedom to do anything he wants. If imaginatively handled by the teacher, sand play can provide scope for growth in many areas.

A small crying child who can not be comforted by anything else often quiets down in a sandbox full of dry sand. The feel of the sand on his hands and feet, letting the sand fall through his fingers, has a wonderful calming effect on most children, absorbs and relaxes them. Especially for small children starting school for the first time, sand play can reduce their tension enough to settle them into the new world of school.

Sand play helps in building many basic concepts through experimentation. Pre-number concepts come naturally through this play. The relationships between quantity and size, volume and shape, different shapes to each other develop in the delightful experiments children do in sand. How a space can be filled with sand or how a solid matter can replace some amount of sand, in other words relationship of space to matter is another major concept children learn through handling sand. The difference between wet and dry sand in consistency, falling, resistance, weight, are other experiences a child gains in a sandbox.

This activity also provides an excellent chance to reproduce situations commonly found in real life. When a small girl makes "chapatis" or "seo" she is copying the womanly jobs that she sees her mother do, which will help her to want to grow into the same kind of woman. Such activities help the child to learn about social customs and habits, and repeated reproduction helps the child to identify with the culture and the people.

Sand play helps the children to remember the facts they already know, encourages them to become more curious about what is around them and to want to know more. For example, characteristics of the local geography are quite often expressed in sand play. Children often make rivers and bridges : if there happen to be any bridges in the town, the children say the names, realize the need for spanning in order to cross from one bank to the other, realize the differences in size and construction of different bridges, the way a river flows, how water only flows downward, so a bit of depression in the sand makes it flow more easily.

Like so many other activities, sand play contributes to the development of small muscle strength and skills, to eye-hand coordination, to increasing imagination and initiative.

You must be ready to answer the parents who say that children are wasting their time in the sand, that they are only playing, by explaining to them all the things that children can learn through this play. You must also be ready to answer their complaints about children becoming dirty, by cleaning children as well as possible before they leave school, by saying that all will wash off, by encouraging mothers to dress their children simply in washable clothes. It the mothers are not satisfied, it is the child who will be caught in a difficult conflict between mother and teacher.

Materials

The sandbox or sand pile can be of any shape ; the recommened size is approximately twelve feet in diameter or 12 feet square. The sides should be about 6 inches above ground level. The sand box can be made by digging a hole inthe ground

nine inches deep and twelve feet in diameter. After the earth is removed the hole can be edged with one layer of at least two rows of bricks standing on ends and half-buried in the earth. On top of this, two more layers of bricks horizontally placed, with mortar joints, will make a durable edge on which children can sit while playing. The edge can also be made of wooden planks ; in that case the edge should have some flat wooden surface all aroumd for the children to sit on. The hole is to be filled with very fine clean sand leaving six inches of edge. It is recommended that the sandbox be made outdoors in a shady area or a sun shade be made over it. Nearness to a source of water, such as a tap or a tank is suggested, as encouragement in mixing water with sand is desirable. In case this is not possible, a big tubful of water can be placed near the sandpile.

Digging implements such as small spades or large spoons, some bowls or containers of various sizes, a few sieves to sift the sand, are required. All these things can be made of unbreakable plastic or durable, light and rust proof metal such as aluminum.

METHOD

Introducing the activity: Most children will immediately start playing with sand, and need no assistance from the teacher. Introduction is only necessary for those who hesitate, who are very inhibited for some reason. In such cases, sit on the edge of the sand box and ask the child to do the same. Touch the sand and let it fall through your fingers several times, while talking to the child about how it feels. Encourage the child to do the same. Make a few "ladus" or fill a cup, always encouraging the child to join in. It may take some time and daily repetition before the child takes active, free interest. Pointing out what fine cakes another child is making sometimes helps.

Routine: Be around the area, at times sit down at the side of the sandbox and talk with the children or ask questions to make them more aware of what they are doing : "Is the

sand in the cup heavier than in the spoon? Which has more sand in it?"

Announce cheerfully but firmly that sand should not be carried away from the box, as this might cause loss of sand and messiness elsewhere. Mention that water can be carried to the sandbox, but sand should not be carried to the water tap (or any source of water that will be used for waterplay). When the children seem to get involved, withdraw but be nearby. Also announce that after the play is over every one should help in picking up the things and rinse and store them in the storage space.

Some children seem to be playing alone ; keep an eye on them. After several weeks of watching, gently suggest to such a child to ask for help from another such lonely child. For example, a child is making "sweets" with sand ; suggest that perhaps the shy child can bring a bit more water to mix with the sand as it might hold better. When those are ready, a third child may spontaneously bring a plate for the sweets. This kind of unobstrusive encouragement and suggestion helps the children to play together and learn how to share and help each other.

For concept building, give informal demonstration lessons in the sandbox. For example, to point out the relation between volume and size, ask a child to fill a large bowl with sand and then ask whether all that sand can be contained in a smaller bowl. The children can do the experiment and find out for themselves. The reverse can be done also. Then ask why the small bowl of sand can be put into the large bowl but the large bowlful of sand can not be put into the small bowl. Everybody replies that they are different in size. You can also demonstrate volume and shape by filling a flat dish with sand and asking the children if it would go into a deep bowl or tall jar. By doing it again and again the children learn about the relationship between volume and shape of a container. Often children think the capacity of a flat shallow bowl is more than that of a tall narrow container. By doing other experiments they can also get fundamental experiences of number, familiarity with a set of objects without counting.

Suggest to a child who is making ice cream cones to give some to other children and see how many each gets. A child can say how much each ice cream costs, then somebody pays that amount and buys the ice cream. The idea of money and the fact that one has to pay in order to buy something develops into the whole idea of buying and selling. The ice cream man can be encouraged to start his hawker's call, so that he remembers about the real ice cream man and copies him.

When children are building a dam or river or any important feature of the local area, details can be added by the teacher's suggestion. It is possible to involve a lot of children in such a project ; one brings water, another brings bricks, others bring sticks and so on. One example may help here. Four children were playing together but could not decide whether to build a bridge or a big river. The teacher suggested why not make both. The children finally got so involved in the play that, at the end of the period they had completed the Sabarmati river with all the bridges of Ahmedabad and the water really flowing in the river. They also added the circus tent and the washermen on the riverbed.

WATER PLAY

Purpose

Like sand, water also has a smooth flowing rhythm which gives a sense of soothing calmness to a child as well as a sense of power because he is capable of making such a wonderful thing happen. The child may experiment with slowly dripping water drop by drop or pour fast and get fascinated by the play of light on the droplets. He touches and stirs the water with his hand, feels the change. He puts an object in the water and discovers that it looks crooked yet it does not look so every time he takes it out of the water. To a child every ordinary object has a special wonder and it is important that he discovers the mysteries through his own eyes. A versatile activity like water play helps a child in many ways to find this for himself.

Another very important aspect of water play is that this

excellent medium of solitary play can and often does very easily develop into parallel and cooperative play. For example, one child who simply can not relate to anyone in the class for a long time, can be especially encouraged about water play. One day he tries to pour water through a piece of pipe and another child playing near him watches. The teacher suggests that the other child can hold the pipe while he pours the water. This leads to cooperation and during a period of months the reserved boy gradually will share and work with other children.

As a child plays with water, wets his hands and again and again repeats the same game of scooping and pouring water with different objects or filling those up, he gets to know the qualities of water. Slowly basic ideas develop, such as the difference between solid and liquid, that one is dropped and the other is poured, that solid does not flow and liquid does. Ideas about amounts of liquid and capacity of a container, relationship between tallness, shortness or flatness of a container and its capacity, all these spontaneously develop in children when exposed to situations where they can experiment and observe.

Materials

1. A source of water such as a tap or a tank.
2. If a tap is not available, a container or tub at least three feet by two feet, 3/4 full of water. If a tap with running water is not available and a tub has to be used, the tub should be rinsed and filled with clean water each day ; the stagnant water from the previous day should never be used. The tub should be filled before the children need to use it.
3. Several plastic or tin jars of various shapes and sizes.
4. Several small pails or containers to carry water.
5. At least two 1½ foot pieces of flexible pipe of different thicknesses.
6. Several unbreakable plastic or aluminum funnels.
7. Most of the equipment of the sand play can be used in this activity.

METHOD

Introducing the activity: Announce that a new activity is going to start. After all the children gather around the water tub or the tap, tell the children that they can pour water in the tub, carry it around, pour it in the sand box but should never pour or sprinkle on one another and get their clothes wet. Show how different containers can be filled with water and poured slowly or fast; give them the pipe to try out for themselves. Remind them that all the equipment for water play should be taken the storage place and put back after the activity is over.

Routine: Every child takes some time to get used to a new activity. For some children water play is easy to adapt to, but for others, who are a little afraid to get their hands wet, it may take several days or a few weeks. it is advisable not to insist on each child's making constructive projects when they first begin water play. After they spend enough time on their own with the water to get familiar with it, informally introduce different science experiments.

Ask a child to fill up bottles of different sizes and shapes with water ; then ask whether the tall and thin bottle has more water than the short and wide jar ; suggest that the children find out by pouring the same amount of liquids into different containers. Afterwards discuss and encourage the children to ask questions and answer them by themselves. Ask questions such as "Why is the water falling through the sieve?" Some children can answer such questions promptly, other know the reason but can not verbalize it. Help these children to think about it, analyse the reason and try to say it.

Like certain other activities this activity can also be used for different purposes. Ask the children how they can carry water to some distance. Most will use conventional containers some will also use spoons but some might use a small piece of pipe to carry a small amount of water by closing the ends with both hands. This can encourage the children to think about a problem and try to solve it by taking it as a challenge. Adaptability to situations, originality and initiative can be encouraged in different ways.

Children often blow through the spout of a mug full of water and see the water spill. How air from the mouth can make movement in the water and how the force can spill the water can be pointed out through questioning.

These may seem ordinary procedures, but these simple activities encourage logical thinking, formulation of concepts and increase vocabulary as well as encourage a child to get over his inhibition to speak up.

BLOCK PLAY

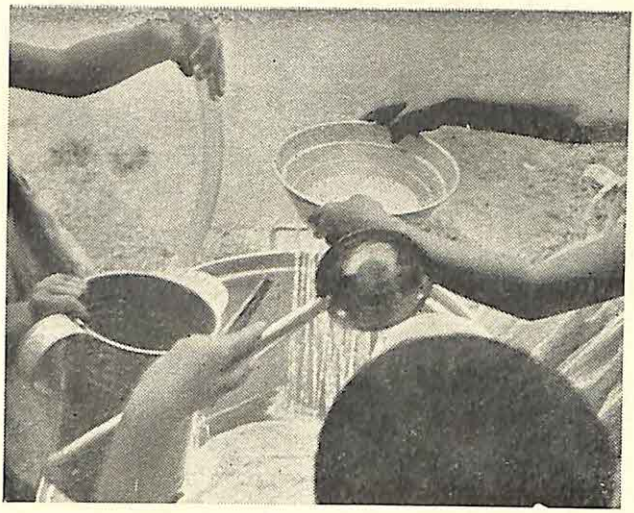
Purpose

Blocks are a material with fixed dimensions, solid and heavy. Given the limited sizes of the blocks, the child piles one on the other, working out how to make a tower as high as possible. He tries to make a "bridge" and learns about spanning. Since the blocks are in mathematical ratio to each other, he discovers proportion and mathematical relationships. His constructive imagination is stimulated as he makes garage, road, train, house, hospital, balances blocks. Children generally work together, spontaneously helping each other, taking different roles. Leadership qualities develop in the child whose ideas are accepted and who directs the building.

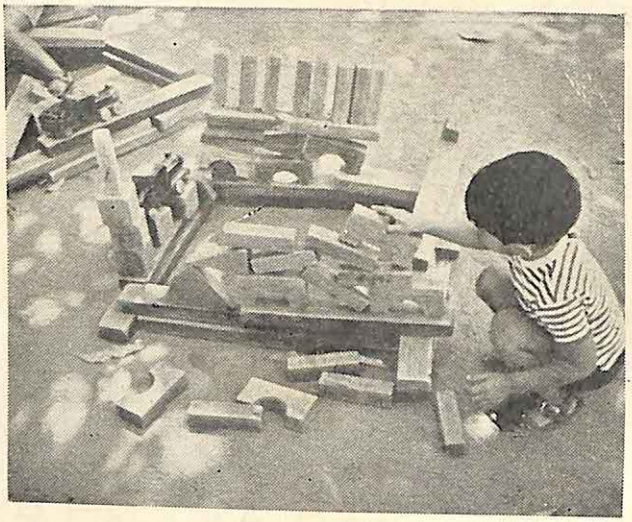
This is a particularly important piece of equipment in the Pre-Primary School, since children have few other opportunities to make constructions of any kind or do anything mechanical.

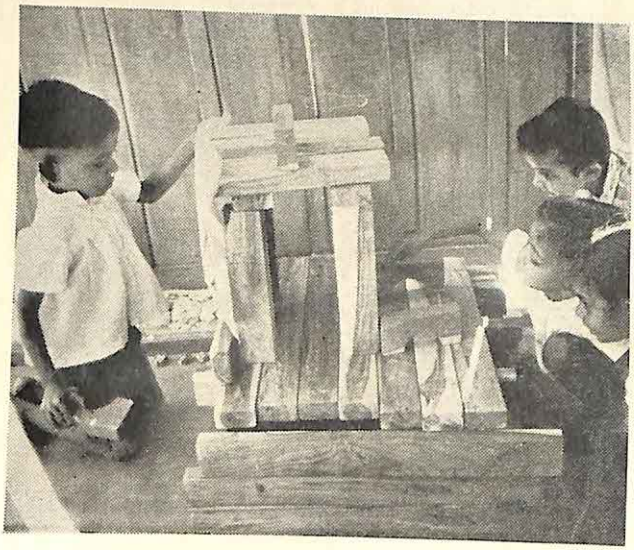
Materials

1. Wooden blocks, preferably teak wood for durability. Following shapes and sizes, 24 of each.
   (These are basic shapes and quantities. The amount of blocks and the variety of shapes can be added to indefinitely, depending on the school's resources.)
   a. cube $2\frac{3}{4} \times 2\frac{3}{4} \times 2\frac{3}{4}$
   b. column $1\frac{3}{8} \times 1\frac{3}{8} \times 5\frac{1}{2}$
   c. arch $2\frac{3}{4} \times 1\frac{3}{8} \times 5\frac{1}{2}$
   d. brick $2\frac{3}{4} \times 1\frac{3}{8} \times 11$

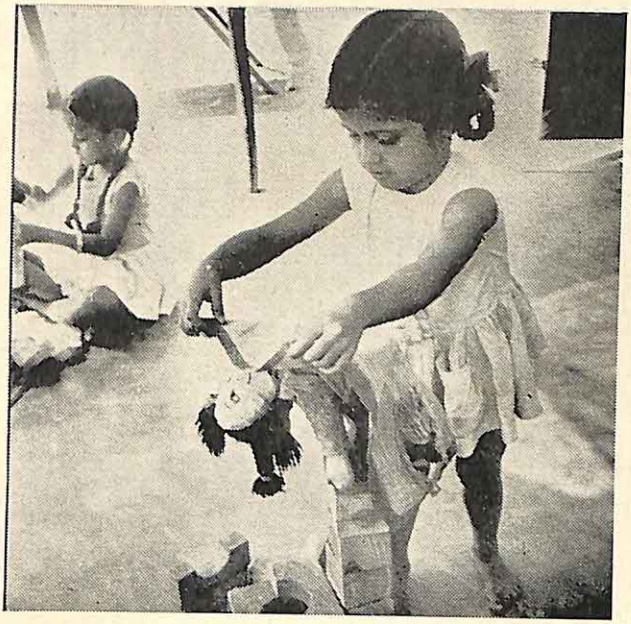


A versatile activity like water play helps a child in many ways (p. 109)

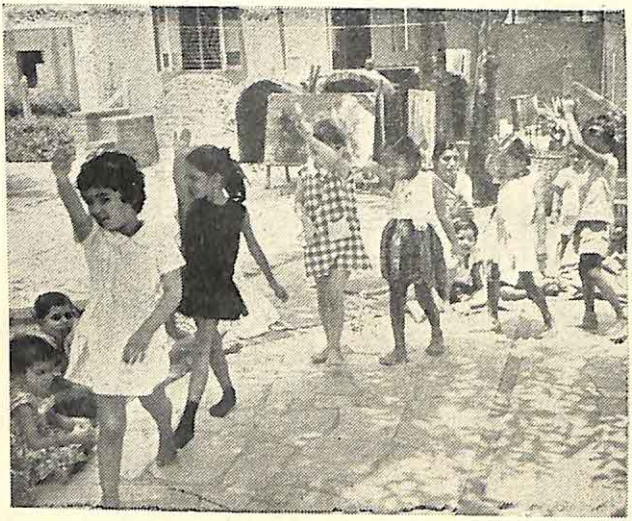




Block play is a particularly important piece of equipment in the pre-primary school (p.112)



Doll play provides scope for unlimited imagination (p. 115)



Activities involving large muscles in the body are essential for children (p. 118)

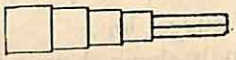
Body movements include dramatization, mimicry or movement by rhythm (p. 124)

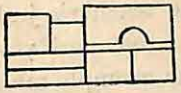
e. brick $2\frac{3}{4} \times 1\frac{3}{8} \times 22$

2. A cupboard to store the blocks.

METHOD

Introducing the activity: For most children, no introduction will be necessary. Just open the cupboard and tell them they may take out the blocks and build. Those who hesitate will watch the others at play, and will gradually join in, taking a few blocks off in a corner by themselves or carrying blocks from the cupboard to the place for building. Keep an area away from the main traffic of the room for this purpose, so that buildings will not be knocked over accidentally. Make sure that children store blocks in the cupboard when the period is over. You can encourage neatness and awareness of size and proportion by having them (1) store all blocks of the same size together (2) by matching blocks of different sizes so that they make equal lengths or volumes.





Routine: Move around, observing the children. Encourage them to use dolls, cooking pots, toy car and other things along with the block play when needed. It is important that children respect the work of others, and move carefully in the block area so as not to break what someone else has made.

Children take time in exploring and experimenting. Some children might take days, some weeks, before they identify their structures. Some will take one block, slide it along the floor all around the room. Often a child does not know what is emerging from his hands.

In the beginning children tend to play alone with blocks. Later they start playing along with others side by side, but not with one another. Allow them enough time to feel at home with blocks. But if cooperative play does not seem to emerge even after weeks, make suggestions about how a child

can help another child in carrying blocks or adding a new wing to the other child's building.

In one instance, two children started building a bridge and called it the Nehru Bridge of Ahmedabad with the Sabarmati river under it and all the cars and buses passing over it. By that time two other children had joined. The teacher inquired about other bridges in the same town. The children wanted to build the other three bridges in the same way also. But the bell rang. The teacher allowed them to keep the structure for the next day when they asked her permission. It was decided that the whole class would observe how the other bridges look when they went home so that they could help in building those the next day. The next day the whole class helped to complete the project of all the four bridges with traffic on them. Even though storage of blocks is the rule after the block time, sometimes such exceptions to a rule can be made for a greater benefit. But how, when and why to make such an exception depends entirely on the teacher's judgment. For this reason, be very alert, imaginative and yet restrained about suggestion.

The example mentioned above not only shows how many children can cooperate but how ideas bring about related ideas. When a child builds a house, it might remind him of a garage, a fence and a gate. Slowly he finds out that he can make almost anything he imagines. Imagination flourishes and with time, skills improve and he builds an increasingly complex concept of home.

Block-building gives a chance to express undesirable feelings freely through play and makes children more prepared to tackle these feelings constructively in real life situations. In one such incident, the teacher explained to the children quite enthusiastically that they would be taken to the hospital for a medical check-up after a few days. She added that there would not be any injections that they would go in a big station wagon, and that it would be fun. It appealed to most of the children tremendously. They built a hospital with blocks; the teacher suggested that stethoscope be made; they used dolls for the doctors, made a car with the blocks

with dolls for substitute children. Only one child started fussing and it developed into a frightened hysterical cry. The teacher's assurance did not help. The teacher sat near the child and finally calmed her down by commenting that she would not have to go if she did not want to, but that she would miss a lot of fun. The teacher left the child alone on purpose and got involved with the exciting game of hospital. The child became half interested in the game, the teacher watching her all the while. The interest of the group remained for the next few days and the child was purposely not asked any questions about the trip. The child was uncertain; she was tempted yet frightened. It was found out later that her previous association with hospital had been very unpleasant. The teacher realised that the child needed some time to herself to work out her feelings and not be pushed into a decision. The teacher did not talk to the child directly about going, wanted the child to realise that there really was nothing to be afraid of and that all the other children thought it would be fun. On the day of the trip when the teacher gently and casually asked the child whether she wanted to go, she agreed.

DOLL PLAY

Purpose

When man, woman, boy, girl dolls are provided to the children they open scope for unlimited imagination. Children can imagine them as teacher and children, bus driver or bus conductor, doctor and patient and many others. Children copy real life situations of father, mother, children and all the people they see. But they can change the characters whenever they choose. In many situations children feel angry, hurt, happy, exuberant. But there may be times when children cannot show their anger openly towards the adults or towards smaller brothers and sisters, because that is not acceptable to others. While playing with dolls, substituting dolls for real people, they make up incidents and situations when a child-doll can easily show his negative (unacceptable) feelings towards the other dolls. When any emotion is continuously

kept in one's mind with no way of releasing it, it upsets the person and makes it difficult for him to relax. Through doll-play children identify with the dolls and make dolls do things that they themselves cannot do in real life, so feel relieved and not guilty. This kind of play is related to play-acting.

Materials

Dolls should be made of materials which can be washed and cleaned so that the children can bathe them. They should be soft, so that the children can hug them, and they feel soft and cuddly. The dolls should have removable clothes with elastic, so that the children can dress them easily. Hair that can be combed or braided is also important, so that the children can play at making different hair styles. One of the most important factors is that the dolls should include man, woman, boy and girl characters, through boyish hair cut, long hair and girlish haircut. The removable clothes should be appropriate for the man, woman, boy, girl characters. The clothes should be the kind usually seen in the particular area. There should be some extra clothes for each doll. Foam-rubber-filled, cloth-covered is recommended, if available The doll should have legs and hands separate from the body and flexible so that the doll can be made to sit down. Along with all these features the dolls should be durable, specially at the hand, leg and head joints.

Method

Introducing the activity: Ask the children to sit down in an informal way and show all the dolls, one at a time, explaining each feature (eyes, hair, clothes, etc.). Explain and show the clothes and point out how each doll is different from the others (man, woman, boy, girl). Also explain that they can be bathed, but once they are wet, they will have to be kept away overnight for drying (if the dolls are made of cloth). The clothes can be washed but they too have to be dried. Also explain that the children should not pull the hands and legs as that might tear them. Explain that after the playtime is over the dolls should be kept in the proper place.

Routine: Some children may play alone or two or three children may play near each other but not with each other, or several children may make up a story and play together. Often a parallel play develops into a group play. Sometimes a child playing alone may later ask another child to join him. Move around and sit or stand near each play.

Provide the desirable atmosphere without intruding on the children. This is a very difficult thing to do, but in general is the most important thing a teacher can do in reconstructive activities, where the child should feel free to make anything out of a situation and create new situations. Watch and listen much more than instruct and do things for the children. A very common instance is that a child starts hitting the doll and the horrified teacher tells the child that one should not hit others. She should rather ask the child what the matter is. He may say that the mother-doll promised to take the child to the cinema but could not keep her promise. The situation is real enough to him; the teacher might calmly comment that adults are sometimes unfair and one feels like hitting them. The child will enjoy this and laugh out loud. In this way the child can release his feelings and go on to enjoy other things. This type of guidance is one of the most important functions of the sensitive teacher.

Often children fight among themselves to settle who should have the dolls. In such instances, help to involve all those children differently. One child could heat the baby's milk, another can give it a bath, a third can feed the baby and all of them can take the baby for a train ride. Some children might even be the vendors in the station, because there will still be some children who could not be provided with a "job" directly with the dolls. Once involved, they may continue the same game for several days selling and calling different hawker-calls and having a very enjoyable time.

Helping the children to do things for themselves and learn how to do them is another point to remember. Often a child comes to the teacher because he cannot button the doll's shirt and asks her to do it. In such times, instead of buttoning the shirt ask the child to try in front of you. If he fails, show the

child how to do it and let the child try and learn it right then and there.

While talking to the children sit down at the child's level so that you will not be much higher than he is. This brings about some amount of equality, informality and sharing between the teacher and the children.

LARGE MUSCLE ACTIVITIES

Activities involving large muscles in the body are essential for children. Often a teacher comments, "The children just play during the recess." Play is not 'just' play, meaning unimportant, but is one of the most important activities making a child ready for physical activities; to some extent physical activities accelerate physical growth.

Physical activities can be set or open. Set activities are organized games of various kinds, drills and marching. The open activities include climbing, running, sliding, swinging, pushing, jumping, hopping, skipping, rolling and many other activities that do not need any organization.

For climbing, jungle jim, walls, net with large holes to put one's foot on, knotted ropes hung from a tree or the ceiling or nailed to a tree, can all be used.

Old scooter tyres for small children and old car tyres for older children are useful things to be rolled on the ground, developing coordination and balance. Swings, made from an old tyre hanging from a tree by a rope or a conventional wooden swing are good. A conventional slide is good for ladder climbing as well as sliding. There is no end to things one can think of and use meaningfully when one understands the reason and importance of physical activities.

3. Teacher-Directed Group Activities

Children must not only learn to choose for themselves, but also to realize that they must conform in certain ways to the society around them and do things that someone else suggests. This is not to say that they should be forced to do what the teacher says because the teacher says it, but rather should recognize that someone else may also have interesting

ideas worth listening to. Therefore, whatever is "Teacher-Directed", i.e. an activity which the teacher initiates and leads, must nonetheless be an activity which will interest children and will be within the range of their abilities. It is detrimental to force a three-year-old to write the alphabet.

Teacher—Directed Group Activities are those which the class joins in as a whole, with the teacher (or teacher-substitute) as leader. Generally, the teacher sets the rules and explains what is to be done, decides the sequence of activities within the period. All children participate in the same activity at the same time, developing a sense of belonging to and cooperating with a group. Thus children sit together, as indicated in the diagrams on page 38. Careful pacing and selection of activities for this period are necessary. Keep variety, but also make sure that each type of activity, such as singing or a sensory game, is done long enough so that children have time to understand and enjoy it fully and so that most children have a turn.

MUSIC

Many kinds of musical activities are possible and desirable for children at this age. Some activities are more formal or "set", such as group-singing, rhythm band, mass drill. Other activities are "open", less formal and using individual variations; these can include movements imitating animals, making one's own chants, marking rhythms with any object that makes sound. Most of these are carried on in a group, but one child playing alone with a doll may sing it to sleep and another may make sound by hitting the ground with a wooden block while playfully walking in a certain rhythmic way. Formal music sessions fall under three heading: singing, rhythm activity, and body movements.

SINGING

PURPOSE

Singing is for pleasure, the pleasure of listening to others and of singing by oneself, singing alone and singing in a group.

Litsening to good music and singing by oneself from an early age encourage the child to appreciate good music, which develops into knowledgeable music appreciation when he grows up.

Singing activities also help a child to reproduce music through his voice. Young children can begin to learn to control their voices for pitch and tune, to listen carefully and then to imitate. Initially their imitation will not be exact but as their attention is drawn to correct tune and beat, and with increased practice, control over their voices will improve.

Materials

It is desirable to have some instrument to maintain tune, such as a harmonium, if someone knows how to play it and if the school can afford it. Otherwise manjeera or tabla can be used effectivefy to keep rhythm.

Method

Introducing a new song: Gather the children in a circle and explain that they should listen very carefully, while you sing the whole new song. Then the children can repeat each line after you sing it. Teach only one verse of a song on any one day, unless there is a lot of repetition. It is essential that you sing in tune with strong, well-paced rhythm and with enthusiasm. Enthusiastic singing by the teacher will generate enthusiasm in the children. Children will perform only as well as the example before them.

Routine: Once the children learn a song well, the routine of singing should be changed completely. This is very important. The children should sing each line *along with* you and should not repeat each line after you sing it. Thus, all will be singing together, with no parrot-like repetition. Repetition again and again after the teacher sings reinforces what the children hear and helps in reproducing. But once the song is learnt well, this kind of repetition is unnecessary. Furthermore, it discourages spontaneity in children. They keep on following the teacher, always expect to have a leader to follow, instead of taking initiative.

In case this seems to be impossible in spite of efforts for a few months, another way can be tried. A child can lead the singing instead of you. Each time there should be a different child to replace you, depending on who volunteers and who carries the tune well. Sometimes suggest names of children who can sing well but do not volunteer.

When the children sing along with you, try to sing so that your voice does not seem to be the loudest, so that the children learn how to sing as a group without your help. Help the group when there is need for leadership, but do not monopolize. Sometimes in group-singing make the most of occasions when children make up songs and chants spontaneously, such as when a peddler passes by with his call, when a bus goes by or a plane flies over. Your recognition of the sound and acceptance of their response will encourage the children to make up songs in informal ways. Join in the chant yourself, encourage all children to chant. These might be included in a drama later on.

A harmonium can be used to carry the tune in group singing. Manjeera is very useful to keep rhythm with the singing and teacher or children can play it. But while playing any instrument with the children's singing, constantly remember that the volume of the instrument should be always to the extent that the children's voices remain the predominant sound. The children sing for pleasure and they should hear their own voices.

Suggestions about the types of songs to choose: Every language has many songs for children. A balanced variety should be maintained. Following is a list of criteria for choosing songs:

1. CONTENT: Songs about a range of familiar things that they see and do, like toys, animals, trains, cars, boats, airplanes, counting, current festivals and seasons, familiar sounds such as hawkers' calls, train going, etc. and some about far-away places.
2. VOCABULARY: Explain all the new words in a song which is in the mother language. A song in a foreign

language should be explained well, including every word. Foreign songs with nonsense words should be avoided, because this will create confusion : children do not know the language well enough to distinguish between real and nonsense words. But familiar nonsense words in the mother language are fun.

3. TUNE : Keep variety in types of tunes, some pitched high and some low, with differing degrees of movements up and down the scale and range.
4. RHYTHM : Have some fast, some slow, some even, some syncopated, some simulating definite movements, like marching. All should be with a clear and identifiable beat.
5. VOLUME : Loud, soft, loud and becoming gradually softer and the opposite.
6. ACTIONS : Some songs will have set actions to fit the words, either sitting, standing or moving.

RHYTHM ACTIVITIES

PURPOSE

Singing, dancing, all musical activities involve rhythm. The main type of rhythmic activities in the Pre-Primary School is marking a beat and its variations. Listening to and reproducing rhythms develop the abilities to observe and discriminate, to be open-minded and flexible, attitudes which are stressed in all curricular areas.

MATERIALS

1. Manjeera, tabla, or any other kind of drum. Any object that makes a pleasant, strong, clear sound can be used to keep the beat.
2. Match-boxes, tins large and small, can be filled with beans or pebbles, each tin with a different size bean, to be used by children to make a beat. Teacher and children should think of different objects to use.
3. Two objects may be struck against each other, like two

sticks, two blocks, two pieces of metal pipe, spoon and vatki. Think of a variety of possibilities.

4. Clapping hands together, hands on knees or other parts of the body, stamping or tapping feet, are also techniques to use.

METHOD

Demonstrate the new beat several times, ask children to listen carefully. Tell them when to start, and they then clap while you use an instrument or clap. Start with very short, simple rhythmic patterns. After the children learn them well, make more complicated and longer patterns. Sometimes a child can take the instrument and act as a leader, setting the beat.

Once children can clap simple rhythms, they can try out various home-made rhythm instruments, as suggested under Materials. Have them also listen carefully to the variations in tone which result from different sizes of objects in a box or tin, or different objects being hit together. They can decide which combinations of sounds seem pleasing, and play those instruments together, each child taking one. This is best begun with a small group while the rest listen, then exchanging, so that all get a turn.

BODY MOVEMENTS

PURPOSE

Small children are slowly gaining control over their bodies, making all the different parts do what they wish. Exercises emphasizing body movements will increase their awareness of the separate parts, like whole arm, hand, fingers, help them to realize what each part can do, control its movement and consciously combine it with the movement of other parts. Movements can be done to rhythm. The child's strength increases, and he develops poise, confidence, and flexibility of both body and mind.

MATERIALS

No special equipment is required.

METHOD

Body movements include dramatization, mimicry or movement by rhythm.

Dramatization: Ask for suggestions from the children about which story to dramatise. Once that is decided, discuss each character with the children : "How does the dog bark?" "How does the parrot feel when he hears the hunter coming?" "Does Goldilocks like Father Bear's bed? How will you show how she feels?" Then ask for a volunteer to try the role. Ask for more suggestions and someone else to try after the first child is finished. Start the dramatization with simple props, such as two chairs with space between for a door-way or a stick for a horse.

Children can also invent their own stories and act them. This can be by first inventing and then acting, or just starting with a set of characters and making up the story as they go along.

Mimicry : This has infinite varieties. The children can stand in a circle and try to walk like any animal, old man, toddler, train, airplane; there is no limit as imagination is used freely. Each child can do the mimicry differently and none should ever be asked to do it in the same way as others. Each child imagines the same thing differently, depending on his intepretation and ability to reproduce. These qualities can be developed by encouraging children to think for themselves and not be afraid to come up with a new way of doing the old thing, such as a new walking style for the camel. Of course whatever is done should be convincing. But if a child is inhibited from the beginning about showing any new idea of his own then this necessary step cannot be made. At first what the children do may or may not be convincing. Make a few suggestions, ask questions about how the animal or person looks. Praise for any new idea is important. Sometimes children might mimic in a way which is not the way the object or animal looks, or walks, but if it gives total flavour of this subject, it should be encouraged.

Movement in rhythm : A part or all of the body is moved to a given beat. Sitting or standing in a circle, first give the rhythm, designate the part to be moved, and ask all children to join in. There is no limit to the possibilities in this kind of movement. Children can move their hands or legs or shoulder or hips or the whole body to keep the beat. They can find new variations. You keep the beat by an instrument and the children can keep the beat by movement of the part or whole body. You can also join the movements and allow a child to keep the beat with the instrument.

Simple drill is also a rhythmic body technique.

Folk dancing like Garba or Ras can be introduced very effectively. Teach it and the children follow.

STORY-TELLING

PURPOSE

Interest in various subjects is awakened through story telling, and children learn to identify with the feelings of others. They learn the traditions of their own nation and religion, and are introduced to foreign ways. Moral lessons can sometimes be incorporated as the meaning of a story.

Visual images develop with the story-teller's interesting way of describing. Vocabulary and awareness of language increase as new words are learned. The children's capacity to verbalize expands as they re-tell stories themselves and describe the same thing in different ways. They come to understand story sequence, with beginning, middle, and end, and sharpen their memories as they try to recall persons and events. There is great pride and poise in telling a story before a group. In discussing their own experiences and reactions, children become more aware of themselves and that all living things have so much in common.

MATERIALS

No equipment is needed.

METHOD

Gather the children in front of you, either as a group sitting close to each other, or in several rows close to each other. No children should sit alongside or behind you, and the nearest children should be about a foot away. Sit on a low chair or stool so that the children in the back of the group can see your face. The atmosphere should be very informal and cozy. Story-telling should have a warm, intimate quality about it rather than formal, cold and distant.

There is no equipment involved in story telling except one, and that is the human aspect. Know the story very well. Do not hurry. Every little detail in the story has to be emphasized Many stories have repetitions like "The first little dog said . . .Then the second little dog said . . . . . and then the third little dog said. . ." and so forth. In such cases the children should never have the feeling that you are bored, but rather your enthusiasm must be maintained throughout and all details should be told with the same enthusiasm.

Story-telling is an art like dramatization. It involves gestures, voice-modulation, volume fluctuation from low to high to higher to very low. Tempo should be even, slow, quick, all these depending on the story. For example, when describing a train, "The little train was so tired, it went slowly trudging up the hill, slowly, slow--ly, slow--ly, slow--ly, slow----ly, and at the. . . . .eeeeeee----nd it reached the top of the hill, and it stopped !!!" All through this, the story-teller should accompany his story with very tired facial and body gestures. The total effect should keep the children so intensely identified with the train that they grimace with pain all through and collapse at the end when the train finally finishes its arduous climb and stops.

A very important "do" about story-telling is to look at each child, constantly moving your eyes from the nearest to the furthest and from extreme right to the extreme left ; no child should feel that he is neglected because the teacher did not "look" at him, every child should feel that the story is being told directly to him. This human element about the

story-teller and the listener is very important to bring about a feeling of closeness. Story-telling on radio or record lacks this quality.

Sometimes the children should tell stories to the whole class and to the teacher. This helps them to organize their thoughts and to be able to pick out the highlights and important points of a story. This sorting, elimination and retention of ideas is one of the basic principles of the human thought process. Children learn it early through story-telling. Learning new words helps the child's vocabulary. While telling a story, each new word should be explained.

Often give chances to the children to fill in details or complete a sequence in a story by asking questions like, "Then what did the monkey do?" The children feel pride in being able to fill in such gaps by saying, "The monkey threw away a. . . .all the caps". This gives them a sense of participation.

Be sure that your pronunciation is very clear, well spaced and with proper emphasis.

Sometimes children hear a story often and repeat it parrot-fashion but don't quite understand it. One such example will make this clear. Several children were trying to tell the story of the thirsty crow and the water jug with a narrow mouth, and how the crow filled the jug with pebbles to bring the water level to the top of the jar. Even though it was an old story they did not understand the basic principles that any volume added to liquid will make the liquid level rise. The teacher realized the problem, asked the children to bring some stones and make a practical experiment in the class by dropping those in a mug half full of water. The children were delighted to see the water rise to the brim. Later, they understood the story better. The teacher's alertness, sensitivity and quick decision can help children in many ways.

STORY-TELLING WITH A BOOK AND READING ALOUD

PURPOSE

In addition to the purposes of story-telling, showing pictures from a book while narrating or reading aloud from a book

helps children to associate the spoken and written word. They come to realize that the little black marks on the page have meaning, thus increasing their motivation for learning to read.

MATERIALS

Books with stories that can be read.

METHOD

Gather the children in front of you (as for Story-Telling). Hold the book high, opening it towards the children and not towards you. Tell the story from memory, once in a while looking at it, or read it line by line. Stop to explain any new words. Pronunciation should be clear, well-spaced and with proper emphasis, and modulation of voice. Please refer to the section on Story-telling.

EXERCISES AND GAMES TO HELP DEVELOP THE FIVE SENSES AND MEMORY

Some people have very keen senses of hearing, smell and touch ; some others have a very good memory, some can make correct judgments of size, for example, just by looking at a thing without touching it. There are many others who are not so successful in any of these ways. Some people are physiologically more sensitive in regard to some organs than others. But in many cases there is lack of development of the senses even when the potentiality is present. The Pre-Primary School syllabus should include activities which will help the children to develop all their potential abilities.

There are exercises which help develop the senses and which are very much loved by children. Specific exercises are given for specific senses. While doing one exercise, use of most of the other senses should be eliminated as far as possible : one of the most basic concepts of scientific experiment is that one has to eliminate all other factors except the one to be dealt with, in order to find out the single cause of an effect.

These exercises also enable children to associate words with these particular senses, thus through actual exper-

ience giving meaning to words and increaseing their vocabularies.

Each type of exercise should not be done every day. It is better to spend a longer time on one or two or three exercises and games, so that children will understand them thoroughly, and "get into the swing". The children's restlessness will indicate when it is time to change. Many more games and exercises can be played than the ones suggested here. Montessori teachers will know many, and you can invent others.

HEARING

Purpose

These exercises help children to concentrate on hearing only, without the help of sight. Thus, they become better listeners when a story is told or a fact is explained. Their comprehension and, in general, their degree of concentration increase.

Materials

Any familiar object that makes sound.

Method

Children sit in a circle. Ask them to cover their eyes. They concentrate for a few seconds. Pick up a bunch of keys or any familiar sounding object without the children seeing it, cover it with a piece of cloth or a cloth bag and make noise for a few seconds. The children should hear the noise several times. Then ask several children to identify it without saying if their answers are right or wrong. When all the children have tried to identify the object, uncover and show the object or say what made the noise, repeat the noise so that they can check with their eyes. The objects used should be very familiar to the children, such as a box of matches, keys, making noise by striking spoons, small bowls and mugs they use in the class, opening and closing of doors and windows, scraping the furniture against the floor.

Once the children get used to the sounds of the familiar objects, new variations can be introduced. Take to class several match boxes or small tin or aluminum containers with lids (all should be alike).

Explain that the boxes are to be filled with different grades of grainy things and ask for suggestions from the children. Each suggestion should be discussed; teacher and children together should decide what materials to use. Whatever decision is taken should be carried out. In case a child makes a suggestion which is not useful, it can be discussed by all. Suggested items : one box with very fine grains of sand, a second with coarser grains such as "sabudana" or "sago", a third with even coarser grains such as wheat, a fourth with dry peas. Every time the box is shaken and all the children get their chances to identify the sound, you should open the box in front of the children so that they can visually check the contents. This technique is very important in scientific concept-building: guessing or hypotheses should be checked by observation.

Another aspect of the sense of hearing is to identify the direction from which a sound is coming. All the children can close their eyes. You walk to a corner of the room and clap or make noise with an object. Then ask individual children from which part of the room they think the sound came.

Make a noise at the right side, left side, over the head, behind, near the feet of a child who has his eyes covered. Each time, he should indicate with his hand from which way he thinks the sound is coming. All the other children wait impatiently for their turns, as this is a very popular game with most children. Once the idea of the game is familiar, individual children can make the sound instead of the teacher. A word of caution is called for here. In each session only a few items should be used. The tendency of over-zealous teachers seems to be to use many things for identifying and many different exercises for identifying the source of sounds, everything all at once in the same session. This confuses and frightens children.

TOUCH

PURPOSE

The exercises listed under this heading help increase sensitivity of the sense of touch, integrating intellectual knowledge and physical sensations. They help children to distinguish different degrees of the same quality as well as to distinguish one quality from another. They help the children learn to classify and order objects by their qualities, e.g. rough vs. smooth, least smooth to most smooth.

MATERIALS

1. Objects with different textures such as rough and smooth.
2. Objects made of different materials such as wood, metal, glass, cloth, paper etc.
3. Objects with different feel such as soft or hard.
4. Objects with various temperatures such as hot, cold, lukewarm.
5. Objects with different weights, heavy, light, lighter.

METHOD

Childern sit in a circle. Ask them to close their eyes.

a) Wrap any familiar object, such as a pencil, scissor, or a small bowl in a handkerchief and allow each child to hold it in his hand for a few seconds. When each child has done this, ask them one by one to identify the object. Then uncover it and show it to the children, asking them to identify it.

b) Pick up an object from the classroom which is very grossly rough such as a cane wastebasket and a familiar very smooth object such as a slate or a pen. Then discuss and explain the essential differences between roughness and smoothness, at the same time allowing the children to handle both the objects. After the concept has become familiar, ask the children to close their eyes and try to find out which is which by touch alone. Start with objects that are very familiar and very grossly opposite. Once children

get familiar with this exercise, use paper, cloth, metal, wood for identifying. Still later, children can differentiate (by touch alone) different kinds of cloths, such as silk, cotton and woolen cloth.

Using hot and cold objects such as warm tea and cold water are also effective. Soft fruit, hard stone, softer clay, water, all can be used to help learn about consistency of various objects.

Weight is another concept that can be very effectively developed in these exercises. The idea of heavy-light-lighter can be given by using wooden blocks of different sizes, as well as many other things.

An interesting idea to introduce to the children as part of general scientific thought is to make them aware of the fact that an object is rough or smooth, cold or hot in relation to another object. This is the basic concept of relativity. A broken glass bangle with some engraving is *rough* to the touch but a bamboo basket is *rougher* than that. On the other hand that engraved part of the glass bangle is *rough* in comparison to the underpart of the same bangle, which is smoother. The same thing is true of cold, colder and coldest objects. A certain quality can vary in degree and can at the same time be rougher than one object and smoother than another. Another interesting fact is that one object may be partly rough and partly smooth. These kinds of exercises encourage the children to be more analytical in their thought process and more curious about everything about them. This becomes a challenge to know and find out the endless comparisons among things.

SIGHT

Purpose

Basic concepts of colour, shape, number, etc. become fun to learn when these exercises are used.

Materials

1. Similar objects of different colours.
2. Shape and colour cards.

3. Similarly coloured objects of different shapes.
4. Different kinds of seeds, flowers, fruits; all these are explained and discussed in the chapter concerning teaching of science.

METHOD

Demonstration of different flowers and their names, fruit cards, insect cards, animal cards, shape and colour cards, recognizing different seeds and later asking the children to identify those by sight, are the exercises involved in this heading. All these are explained in much detail in the chapter concerning teaching of science, II Noticing Similarities.

SMELL

PURPOSE

The sense of smell is probably the least developed sense in human beings, but one which can be cultivated to our advantage.

MATERIALS

Any familiar object that has a distinctive smell, such as flower, onion, soap, toothpaste and many other objects.

METHOD

The children sit in a circle. Cover an object with cloth and take it near each child; let him smell it, or ask a child to take it around. When all the children have smelled ask each child to identify the object. Later show the object to the children.

In the beginning, use objects that are very familiar to the children and completely different from one another in their odour such as onion and rose. A few days later, when the children get used to it and can successfully identify those, variations of smells of the same kinds of objects should be used, such as different kinds of flowers, different kinds of spices, different kinds of oils, shortening, ghee. The teachers' imaginativeness can be very useful in finding new things to

experiment with in this regard. Liquids can be stored in small jars.

TASTE

Purpose

The sense of taste needs careful cultivation.

Materials

Objects with different tastes: sugar, salt, pepper, bitter thing like neem leaves, and sour object like lemon or tamarind.

Method

Objects with all the five basic tastes are tasted by the children and proper labels or names are associated with those tasted, to establish understanding and vocabulary. Once these are learned, give the children the same objects or different objects with the same taste and ask them to identify those.

MEMORY

Purpose

These exercises increase the power of observation and the power of memory when the object is absent. Eventually this leads to developing the ability to remembering facts and knowledge in general.

Materials

All kinds of unrelated miscellaneous objects which are familiar to the children.

Method

Children sit in a circle or in a group.

a. Put one object in front of you, where all can see it. Ask the children to identify the object. Then cover it with a piece of cloth and ask the children to tell what the object is. Add more objects, one by one, to make the game more difficult.

b. Ask the children to observe the objects in front of you, two or three at first. Hide one object and ask the children to identify what is missing. Later, add a new object and ask the children to identify the new object. This exercise can have many variations depending on how imaginative the teacher is. But like all other exercises, one or two variations in each session should be enough.

ORGANIZED GAMES

Purpose

A healthy young child is a strong individualist, looking at the world in his own terms, generally unable to understand the feelings of others or see things from another point of view. He wants to do things in his own way, and does not understand what it means to follow the rules.

Organized games is an activity where rules are made very explicit, where the point of the game only comes if one does follow the rules. Children learn to cooperate, to respect the abilities of others, to enjoy the game whether they win it or not. Large muscle skills, balance, and coordination receive practice.

Materials

Some games require no equipment, others require simple apparatus which is listed under the description of the game.

Method

Introducing the activity: Each game will have to be carefully explained several times in order for children to fully understand. The first time they play, have them go through the motions slowly, using as demonstrators children who grasp quickly and who will understand what to do. Such slow motion practice may have to be done for the first few minutes on several different days.

Routine: Repeat the rules of each game every time it is played. Play each game enough times so that all children

have equal turns and the same children will not win all the time, but not so many times that the children become bored. If there are teams, make sure that they are balanced in abilities; if two children must race or play against each other, make sure to pair those of equal skills.

Suggested games: A few basic types of games will be indicated with one or two variations of each. More games will be found in

1. Syllabus for Gujarat State, Primary.
2. Newsletters of the Indian Association for Preschool Education (IAPE).

You and the children can also make up your own variations, depending on the equipment that you have at hand. Also add games which are played locally.

GAMES WITH A BALL

The ball used should be fairly large, about 6" diameter, so that children can grasp and catch it easily. It should be hard enough to bounce well.

a. All children and teacher stand in a circle. Call a child's name as you throw the ball in his direction. Throw down, so that it will bounce before it reaches the child. That child must catch it, then call another child's name and throw the ball to him. And so forth.
b. The same game may be played sitting on the ground, and rolling the ball.
c. "Dodge Ball". Most children stand in a circle, with a few in the middle. Those on the outside try to hit with the ball the legs of someone in the middle. Those in the middle try to "dodge" the ball, that is, run about so as not to be hit.
d. For this game two balls are required. Children stand or sit side by side forming two lines of equal length. At a signal, one ball is passed from hand to hand down each line. The team whose last member gets the ball first is the winner. If the ball drops, it must be picked up and given to the next player.
e. The same game can be played with children in two lines,

one behind the other. The ball is then passed over the heads. Children should keep their two hands raised, ready to receive the ball. This game is difficult, requires very good coordination.

RELAY RACES

These games all require teams equally matched. There may be two or more teams, depending on the size of the class. Teams should not be so large that it takes a long time before each child gets his turn.

The first team completing the realy is naturally the winner. But the game does not stop when they are finished. All others should also be cheered on, until the last one comes in. You can even call, "Kumar is first" "Jayesh is second" "Ashwin is third" and so forth, so that all children receive recognition.

a. Simple running relay. Children line up, in their teams, one behind the other. To avoid confusion, it is important that they stay in line and keep their lines straight, that a space of a few feet is kept between lines. Have some goal for each team about 10 yards from the leader. This may be a teacher, a table, etc..; it must be something the child can touch easily. Each child runs to the goal, touches it, runs back and touches the hand of the next member in his team, whose turn it then is to run to the goal and back, and so forth. The one who has run should go to the back of his team's line. When the first runner comes to the head of the line again, that team is finished.

b. Same relay, walking.

c. Same relay, hopping.

d. Same relay, walking forward, to the goal, walking backwards to return.

e. Same relay, with the runner holding a stick that is passed on to the next runner.

f. Same relay, walking with a plastic plate or other flat object on the head. If the object falls, it must be picked up and the child continue from the place where it dropped.

g. Same relay, walking while holding in the hand a spoon

with a lemon or other small round object in it.

h. Five or more children line up next to each other. At a distance of 5 yards or more are an equal number of dishes, each with a thread and an equal number of beads. At a signal all children run to the dishes and thread the beads as fast as they can. The first one to return to his place with a completed string is the winner.

MUSICAL CHAIRS

This game requires enough chairs, mats or stools so that all children but one can be seated. Arrange the chairs in a long line, facing in alternate directions. If mats or stools are used, find some way of indicating that they face in different directions.

Children stand in a ring around the chairs. You stand or one side, so that you cannot see the children and make noise with manjera, by hitting two blocks together, or sing. While the music is on, children keep walking (all going in the same direction) around the chairs without touching them. The music should stop suddenly, at which time every child tries to sit in a chair. Each chair may be sat in only from the side which it is facing ; no child may squeeze between two chairs to get to one facing away from him, but must run around the line to get to it. One child will be left without a chair, and must be out of the game. One chair is removed, and the game repeated. With every round, one child is out of the game and one chair is removed, until there are only two children running around one chair. The one who gets to sit in that chair is the winner.

SINGING GAMES

a. I sent a Letter to my mother.

All sit in a circle. One child, holding a handkerchief, walks around the outside, while all sing:

I sent a letter to my mother,
On the way I lost it;
Someone came and picked it up
And put it in his pocket.

At some point during the last line, the child drops the handkerchief behind a seated child. All sing: Isn't it you? Isn't it you?....The child who dropped the handkerchief runs around the outside of the circle, to sit down in the place of the child behind whom the handkerchief was dropped. That child, meanwhile, as soon as he has realized that the handkerchief is behind him, picks it up, gets up and runs after the first child, trying to catch him before he sits down. The second child then walks with the handkerchief while the song starts again.

b. Blue bird
All but one stand in a circle, holding hands. Sing:
Blue bird, blue bird, through my window (3x)
Oh. Asit, I am tired.

During the verse, one child walks, weaving in and out under the joined hands; in front of one child, under the hands, in back of the next, under the hands, in front of the next, etc. On the last line of the verse stops behind a child, whose name all sing, and puts his hands on that child's shoulders. He taps the shoulders while all sing:

Take a little boy (girl), tap him (her) on the shoulder (3x)
Oh, Asit, I am tired.

Then both children weave in and out. "A sit" in the lead. The circle closes where he had been. The game repeats.

4. Teacher-Directed Individual Activities

The activities included under this heading are those which form the basis of academic skills in the Primary Standards, namely reading, writing and arithmetic. They are Teacher-Directed in that a fixed time is set aside in which children are to practice and develop these skills rather than choosing an activity themselves, and the series of exercises is decided by the teacher, each one introduced in sequence to the child as he develops. They are Individual in the sense that while the group as a whole is working for readiness on some stages of

reading, each child individually at any given moment is doing that exercise which is suited to his "sensitive period" or degree of maturity. These will be exercises that the children like, and within a limited scope they may express their desire to do one exercise rather than another, for example to repeat one they already know very well, to try a new combination of colours, just for the fun of it or because his friend is doing that. Thus each child may be doing something different. Each one works by himself, and the teacher moves from one to another, guiding and instructing as needed.

READINESS FOR READING AND WRITING

Before plunging with children into the great task of learning to read and write, a great deal should be done to foster the development of the skills, interest, and curiosity which will help them to learn quickly and enthusiastically. Thus the Pre-Pe-Primary School needs to be greatly concerned with each child's "readiness" to read and write, before he begins formal work, and to establish a "readiness program". "Readiness" means a level of physical and mental maturity at which the child is able to meet the requirements of the task with understanding, interest, and relative ease, and when he wants to do so. It includes consideration of:

PHYSICAL ASPECTS

a. Small muscle coordination.
b. Eye-hand coordination: being able to do with his hands what he wants to.
c. Ability to sit still for some time.

MENTAL ASPECTS, GENERAL

a. Familiarity with the notion that symbols stand for real objects (this is "reading" in a broad sense).
b. Concentration.
c. Pre-planning: have some ideas about what he wants to do before he starts work.
(d) Context: see and think of things in relationship, in a total context, and not as isolated items.

e. Classification: being able to group things, according to various criteria, such as "things that cut".
d. Powers of observation: noticing what goes on about him.
g. Free use of native language.

MENTAL ABILITIES, SPECIFIC

a. Powers of discrimination: being able to distinguish things that are the same, things that are different, to pick out small details.
b. Sequence: recognizing and constructing beginning, middle, end of a story or series of things, recognizing what is missing in a series.
c. Memory.
d. Following directions accurately.
e. Working left to right, top to bottom of a page.

In addition, where reading and writing is to be taught first in a language other than the mother tongue, the child must have an elementary grasp of that language as it is spoken. This is, after all, the natural sequence of learning. He should be able to understand many words and structures, to follow stories and directions, to speak to some extent even if not freely.

He should clearly distinguish sounds in the language and have an initial facility in relating similar sounds, like thinking of words beginning with 'b' or that end like 'cat'. Only then can he understand what he reads and realize that reading and writing are forms of communication like speaking, that is, putting down the spoken words.

There are no hard and fast lines below which a child is not ready and above which he is ready to read and write. The observant and sensitive teacher watches every child and notes his progress. She must make a judgement based on her observations and on her experience of development patterns of normal children. The child will certainly not be conscious of his abilities and be able to tell the teacher directly; it is only by noting his behaviour in many different kinds of situations

that she will be able to judge. His drawings and paintings will show recognizable forms and order, will be planned before he puts brush or crayon to paper. He will model clay with his fingers, making real objects. He will cut precisely, through all kinds of paper. He will be able to sort in science and speak about what he is doing. In many activities his attention span will be long and intent. All children will not be ready at the same chronological age. For most, between four and five years is suitable, but many will not be able to do what is required until they are past five years and have had many "readiness" experiences and opportunities to freely work out their psychological or physical difficulties, to become sufficiently mature. Such children are likely to catch up with the others in First or Second Standard, if permitted to go at their own speed; only then will they enjoy reading and writing.

All the activities of the school day contribute to readiness, in their own ways. While these activities are ends in themselves, each with its own intrinsic purposes, they are also carefully chosen and planned with an eye to their contribution towards reading and writing work. In "set" handwork, for example, small mucles get much practice: fine eye-hand coordination is required to cut accurately along a given line or to precisely paste the corners of a pinwheel. Neatness in work is required throughout, and children must sit still and concentrate long enough to finish a job. It takes careful observation and realization of the sequence of lines and dots to correctly stitch a design on card or cloth. In "open" handwork, where the child paints, draws, and models clay according to his own inclinations, he has the opportunity to plan his work in a dvance if he so wishes, "Now I'll make an aeroplane." or to carefully paint a series of crossing lines and then fill in the spaces with different colours, one after the other. He draws whatever he likes, so may make a tree with birds in it and ground to grow from, clouds and sun in the sky above, i.e. the whole context for the tree. The opportunity to look at pictures and picture books provides essential background for learning to read. Understanding the symbolic nature of pictures is already a type of reading. Narrating what is hap-

pening in the pictures, one after the other, gives a notion of sequence; looking for details, similarities and differences are all given practice. The teacher may read and children look, and they will soon come to realize that she is reading the squiggly marks under the pictures, that they have a distinct meaning. Singing songs, learning rhymes, telling stories and allowing every child to tell a story encourages thinking in terms of a definite series of events or items. Playing games that demand memory, concentration are all to be included. In science activities many manipulative skills are used in handling equipment and carrying out experiments, in sorting, measuring, planting. Powers of observation are constantly developed as children feel their own and each other's heart beats, note the growth of plants, compare the look and smell of insides and outsides of vegetables. Most of all, conceptual thinking is promoted as children are encouraged to see relationships among things, to relate new information to what they already know, to apply what they know in new situations, to classify. They water their plants, feed the rabbit, eat and drink themselves, and come to realize that all living things need food and drink. They listen to the ticking of a clock, take it apart and watch the gears turning inside with every tick. They are encouraged to be curious and to ask questions, to try to find answers for themselves, to test observations and first thoughts.

Carefully observe each child and encourage him to notice, to be more careful, to think of relationships, constantly pushing him ahead and stretching his abilities.

In addition, specific exercises can be given to foster the development of readiness for reading and writing for children who are four years old. They are designed to increase awareness and improve eye-hand coordination.

ORAL READINESS EXERCISES

The activities listed below may be done with a small group of children or with a whole class, depending upon the readiness of the group. Generally, they should be done both ways, at different times and at different levels of difficulty

according to the children's needs. You may work with a small group during Individual Activities time and may also make the games part of story telling.

MATERIALS

Little special equipment is required. Collect items from the general materials of the classroom.

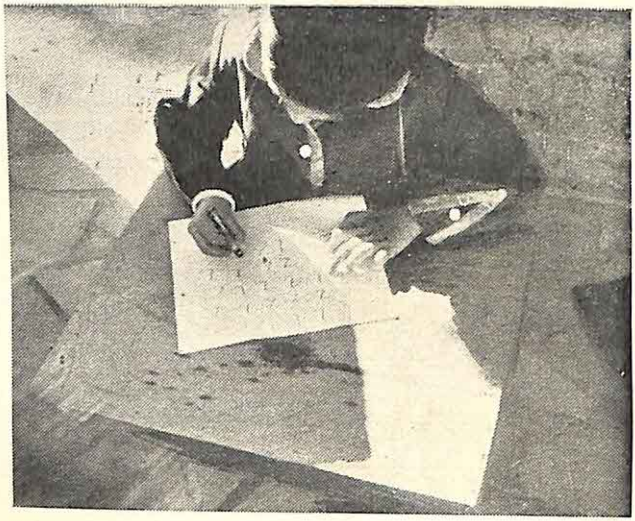
METHOD

In every game, present the topic and ask children to respond: "See if you can think of a word beginning with 'b' (pronounce its sound). Raise your hand if you know one". Since many children will problably be eager to answer, it is best to wait for several hands to go up, then call on children one by one, rather than having them shout their answers all at once. If a child makes a mistake, ask him to think again: "Does car begin with 'b'? Listen, C-car. What sound does car begin with?" Ask the shy child if he also can think of a word, gently encouraging him to speak out.

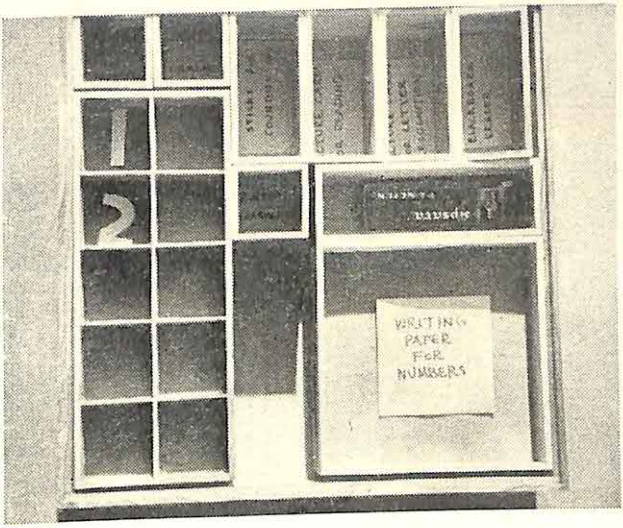
The games listed below are meant to be suggestive. Use your imagination and think of many more.

1. See Number Readiness
2. See Science
3. See Memory Games.
4. Phonics Games.
   a. Think of rhyming words.
   b. Think of words beginning with the same sound as one's own name.
   c. Fill in rhyming words of a poem.
   d. Think of words beginning with 'b', ending with 't', etc.
5. Recongnizing missing elements:
   Prepare pictures where some part of an animal is omitted, or some part of a diagram. Ask the child to tell what is missing. Make the missing part smaller, and less obvious.

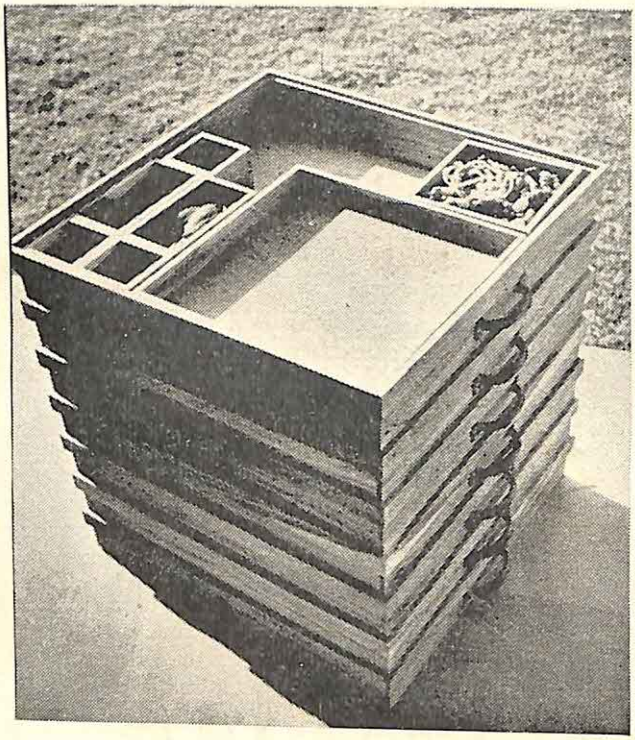
Interest in various subjects is awakened through story telling (p. 125)



Posture is extremely important and should be carefully supervised (p. 147)



Activity Boxes (p. 160)



Activity Box (p. 160)

6. Sequence:
   Pictures may be cut from magazines or newspapers, from old children's books, or drawn by a teacher. They should be of familiar objects and situations.
   a. Collect a series of pictures that tell a story and put them in the correct order. Ask a child to tell the story.
   b. Mix the sequence and ask the child to correct it. This could be made into an individual exercise by having each child paste his pictures on a page in a correct left-right, top-bottom order.
   c. In a series of pictures omit an ending, ask children to complete the story as they like.
   d. Show a picture which has a lot of detail and action, ask the children to make a story about it.

7. Classifying:
   a. Start a collection with two or three things from the classroom, ask the children to bring more, ask them to bring some from home on the next day.
   Keep the objects together for some time so that the collection may be added to. Keep it in a conspicuous place for all to see and question, become interested, as a "museum exhibit". (See Science for details.)
   b. Matching related items: show a picture of stars, have children choose from a set of other assorted pictures some thing which is also in the sky, like moon.
   c. From a set of items, select those which belong together: shoe, dress, hat are things to wear but pencil is not.

WRITTEN READINESS EXERCISES

MATERIALS

1. Worksheets as described below and as shown in the samples, p. 150-152. Each worksheet should be at least 6 in. x 6 in. Lines may also be drawn on slates where paper is not available.
   a. one large and one small circle, triangle, square drawn in outline.
   b. square paper, each square 1 in. x 1 in. minimum.

2. Heavy cardboard patterns of circle, triangle, square (to make worksheet and for children to trace in Exercises 10,12,13,14).
3. Coloured paper circles, triangles, squares of same size as those on worksheets (to be pasted or placed on, in Exercise 1 and 2).
4. Crayons, pencils, or chalk, rulers for each child.
5. Workcards for Exercises 15 and 16, as per samples, P. 151-152 These should be of heavy cardboard.
6. Four-lined paper, about 3/8" distance between lines, 5/8" between each set of lines. Top and bottom line of each set printed in red, inside lines in blue.

There is no fixed pace for presenting these exercises; each child works individually and should proceed at his own pace; different children will be working on different exercises at the same time. Nor is there a fixed number of times that a child should do each exercise correctly. The child may say himself that he dosn't want to do this any more, that he wants something else. Or you may observe that he is doing the work neatly and mechanically, that he now needs more challenge. There is no reason that a child should not do something easy for him from time to time, but he should also progress as he is able to, at his own speed. There may be a definite time when the child comes to work, or the worksheets and other materials may be readily handy and the children use them when they wish. Give instruction in the correct procedure individually or to a small group at a time. Children should follow directions carefully.

METHOD

Many exercises in precise drawing are given, as listed below. Start with the use of wax crayons, rather than pencils, as they are softer and therefore easier to handle; children can get a good strong line without undue muscular pressure. Chalk and slates are also suitable. If paper is used, the children collect all the pages of their work, each child making his own book, and these are sent home fortnightly for parents to see, returned so that the new pages may be added. Children

leaf through them periodically to see their own progress, to compete against themselves rather than each other.

Posture is extremely important, and should be carefully supervised, although not so rigidly imposed that the child feels hampered. Back should be straight. writing fore-arm should rest on the writing surface, crayon or chalk loosely held. Paper or slate should be slanted at the same slant as the writing arm. There should be no attempt to change strong left-handedness. The other hand should rest on the top of the paper or slate, to hold it in place. Emphasize progress from left to right and from top to bottom of the page. Since most straight line letters are made from the top down, (such as: f p t), children should develop the habit of making lines in this way; since tost circular letters (like a c e g) are made from the top progressing counter-clockwise, the children should form circles in this way.

The exercises described here are meant only to be suggestive; an unending variety is of course possible for the imaginative teacher. It is important to maintain interest throughout and to keep a sequence of graded difficulty so that skills may mature.

In all cases start the term with big objects, big and clear similarities and differences, and work continuously towards smaller and finer observations and distinctions, until the time when the very small differences among letters can be clearly apparent to the children. Children should always be systematic in their work, always proceed carefully.

EXERCISE	MATERIALS
1. Match and paste cut-out shapes correctly on work-sheets. a. Children are given the necessary pieces for the particular sheet.	Worksheets (see sample) P. 150 coloured paper forms, gum. The technique of gluing should already be known and individual dishes and brushes provided. For (b) organization of the space must permit easy access to cut pieces.

b. Each child chooses from a central place the pieces he will need for his own sheet.	
2. On the same type of worksheets paste a shape over the larger form, colour the smaller one; then vice-versa.	Worksheets, coloured paper forms, gum, crayons.
3. On the same type of worksheet colour the shapes, in one direction only, within the lines.	Worksheets, crayons.
4. Colour the squares on worksheet, all lines going in the same direction.	Squared paper (see sample), P. 157, Crayons.
5. Draw lines with ruler: a. All lines going in the same direction. b. Lines at right angles. c. These spaces may then be coloured in.	Paper, soft lead pencils, rulers, crayons.
6. Draw a single vertical line in each box of squared paper.	Squared paper, crayons.
7. Draw a single diagonal line in each box of squared paper.	Squared paper, crayons.
8. Copy one, two, or three marks.	Squared paper, crayons.
9. Colour alternate squares.	Squared paper, crayons.
10. Trace around geometric shapes.	Paper, stiff cardboard shapes, crayons.

11. In clay-work make geometric shapes: a. In two dimensions. b. In three dimensions.	Clay.
12. Give set of shapes for tracing: a. Ask to trace 3 triangles, 2 squares, etc. b. Ask to colour 1 of those blue, 2 yellow, etc. c. Suggest making pattern on the page when tracing around shapes, first using only one shape, then two.	Paper, stiff cardboard shapes, crayons.
13. Trace around geometric shapes within boxes of squared paper.	Stiff cardboard shapes, crayons paper with large squares printed on (squares larger than shapes)
14. Copy geometric shapes.	Paper, crayons.
15. Observe similarities and differences. a. ask the child to show which items in a line are the same, which one is different, how it is different. b. Have him put a cover over the item in a line which is different and in this manner complete the whole card.	Similarity and differences cards, in graded sequence (see samples, P. 151 & 152), answer strips, pencils for (d), small objects like chikoo seeds.

c. Similarly for similarities.

d. The child copies the appropriate form on the answer strip. (No answer is written on the work card itself.)

16. Complete a sequence in the same manner, such as OXOX.....

Paper, crayons.

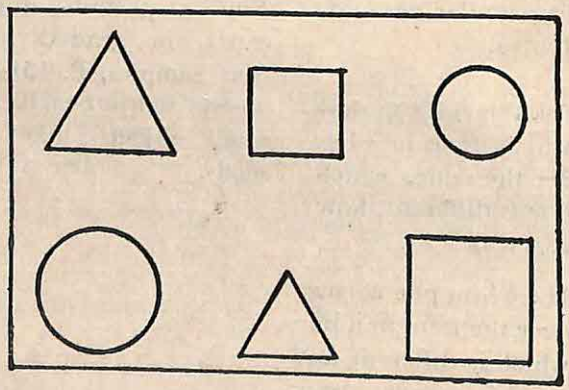
17. Copy writing patterns.

(a) Squared or four-lined paper, writing patterns (see samples P. 153-156), crayons, can also be done with large paper, but not in art time.

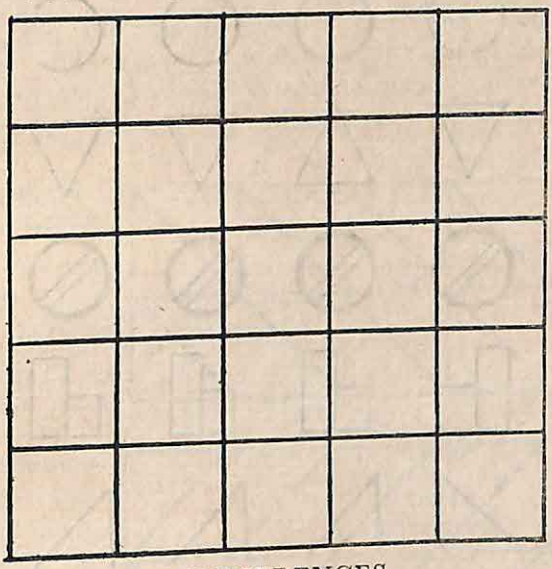
WORKSHEETS

Cyclostyled, in great quantities, permitting each child to do as many sheets as he wishes in one class period.

Exercises 1,2,3, $\frac{1}{4}$ size.



Exercises 4,6,7,8,9,17 $\frac{1}{4}$ size

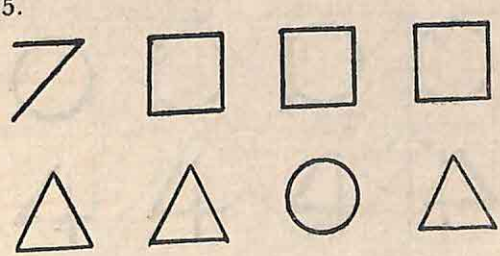


SIMILARITIES AND DIFFERENCES

Teacher draws exercises on heavy card; children take turns using them. Several exercises of one level of difficulty should be drawn on each 8"x10" card : about 6 per card, drawn large, for levels and 2; 8 or 9 written slightly smaller for levels 3 and 4; 12, drawn smaller, in two columns, for the most difficult. When letters or numbers are used, they are only intended for recognition of similarities and differences and not for identification. Only samples are given below, and you will think of many more, and size of printing is not indicated.

Exercise 15.

1.



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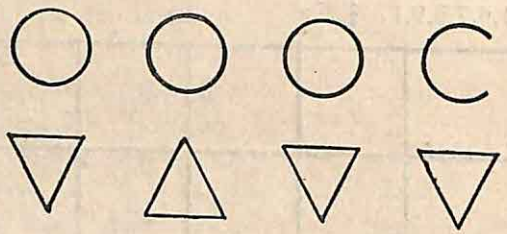

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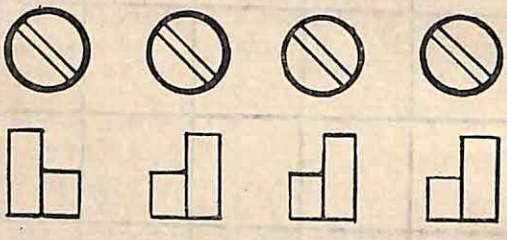

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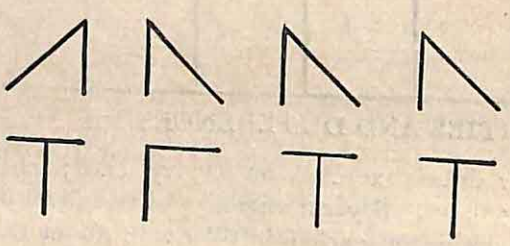
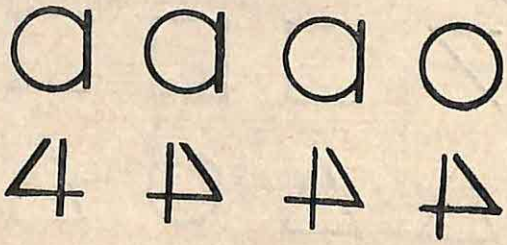


5.

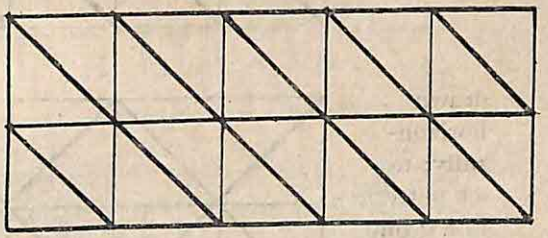
6.



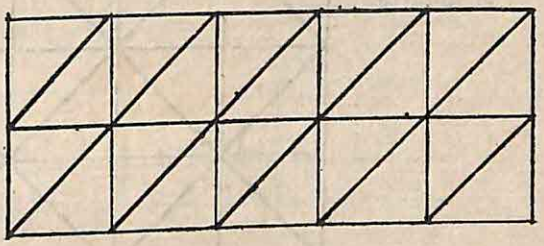
WRITING PATTERNS

This is a collection of samples which the teacher keeps. On each child's paper, draw the first sample of the exercise that he is to do. Patterns on squared paper can be coloured after drawing, with different colours to emphasize the patterns.

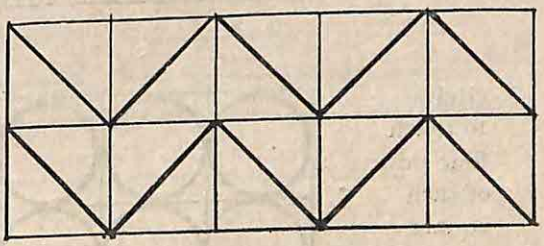
1. top to bottom, left to right, line by line across



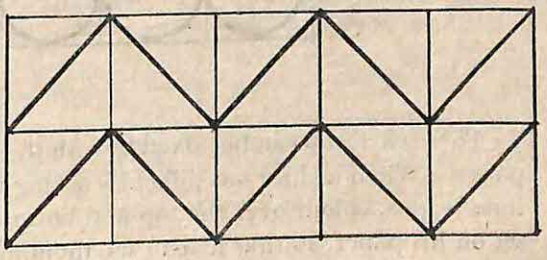
2. top to bottom, right to left, line by line across



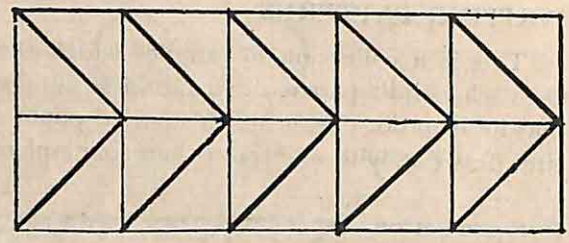
3. drawn horizontally without lifting the crayon in each line



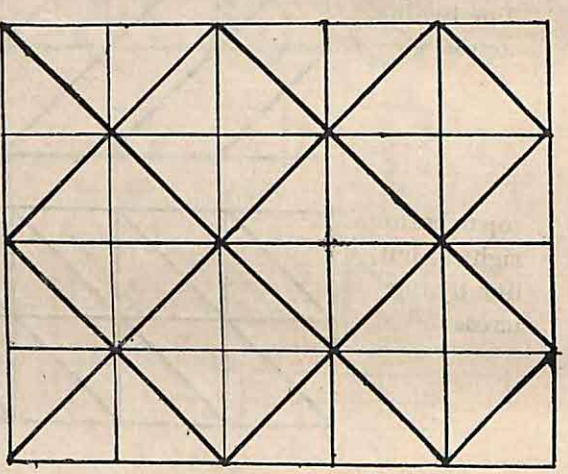
4. as for 3.



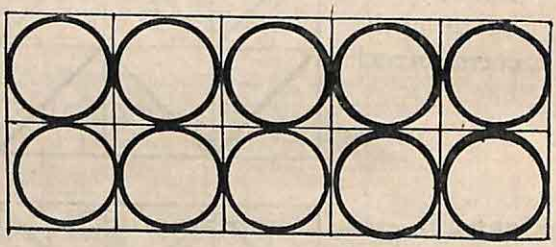
5. drawn vertically



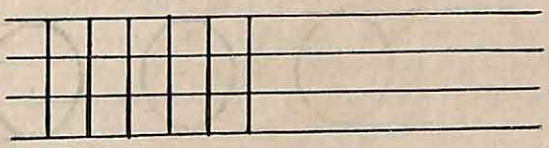
6. drawn horizontally; to see pattern in a group of squares

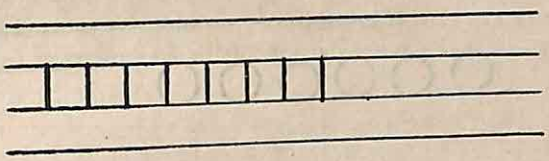


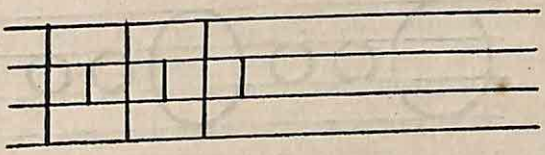
7. circles to touch four sides of each square

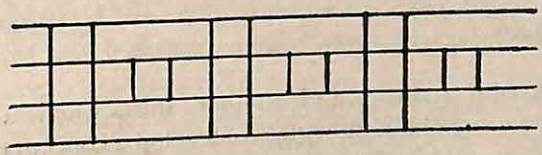


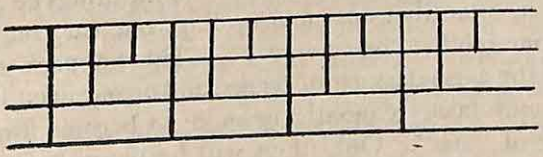
These exercises can be mixed in with those done on squared paper. When a child has difficulty seeing where a new set of lines begins, colour over the top and bottom red lines of each set on his paper, so that he can see them more clearly.

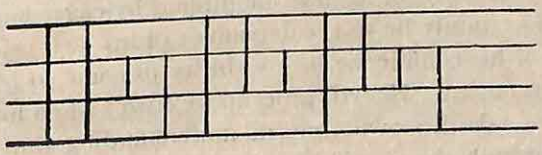
1 

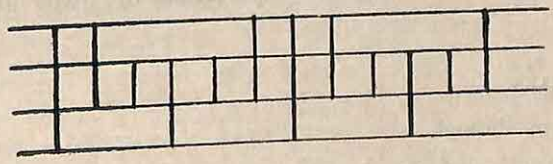
2 

3 

4 

5 

6 

7 

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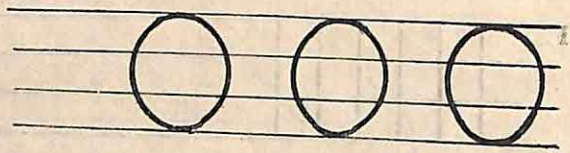

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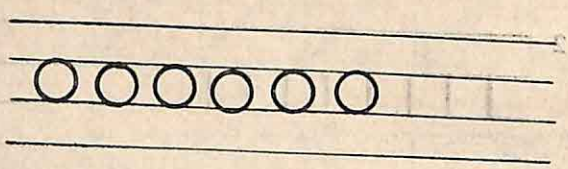

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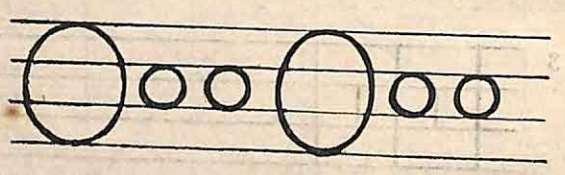


NUMBERS

Work with quantity and numbers starts when a child is about two years old, and begins to develop a concept of "one". He comes to attach the label "one" to all things he sees that are one in quantity: one man cycling, one car coming, one candy, one mother, one house.....This happens spontaneously, in the normal course of events, and no one need interfere: a child may take six months or more to become firm in his standing of "one". Only then will he naturally proceed to "two". He may of course be pushed by eager parents, but this will certainly be to the detriment of his own pride of discovery, of his confidence in his ability to come to terms with his environment. He will proceed to "two" when he is ready, and then take his own time in understanding that concept, again through the manifold experiences of "two" all around him.

MATERIALS

1. Flannelboard.
2. Flannelboard numbers.

3. Many kinds of objects to count. Some will be things from general classroom use. Objects specifically meant for counting should be large enough to handle easily, remain where placed (so not round); chikoo seeds are excellent. At least 20 per child are necessary.
4. Paper or slates with 1 in. squares, 5 across and 5 down or 10 across and 10 down (so that children unconsciously become accustomed to the basis of our number system).
5. Pencils or chalk.

METHOD

Observe, listen to, and talk with each child to see at what stage he is and what he has memorized by rote. Many children may come to school at the age of four years able to count mechanically but with little understanding of the quantity that the number names stand for. Accept what every child knows, allow him to speak it to you and to the group, but in such cases of rote learning provide ample experience for and guidance toward understanding.

At first, teaching of number concepts remains informal. There are many general terms of quantity that we use in daily speech; more, less, big, small, heavy, giant, high, low and many more. When a child uses a term, talk about it with him and suggest more activity; a child working with clay may say, "See my long snake." Teacher: "How long is it?" or "It's so long. Can you make a longer one?" or "Can you make a short one too?" or "Can you make lots of snakes? Make some long and some short." Thus extend his experience and encourage him to think further. In this way, the ordinary mathematical words come to be used more clearly and consciously, laying a strong foundation for later precise mathematical work.

In many activities throughout the day, take opportunities to ask about number, to count with the children. "How many red beads have you put?" "How many girls are present today?" Focus a child's attention on the quantitative aspect of what he is doing, encouraging him to see many, many instances of "one", "two", "three" all around him, to

strengthen his concept in the manner in which it develops naturally.

It is important, according to the latest work in syllabus, construction by mathematicians themselves, that from the beginning children develop the ability to instantly recognize "sets"' of certain quantities. That is, seeing four objects they should instantly say "four" without having to count, "one, two, three, four". They should be able to recognize this "set" regardless of the grouping within it, whether it be two and two or three and one or four all bunched together. Thus their concept of "four" will be distinct from their concept of "five" or "three" and not merely an additive one plus one plus one pluse one. Another important mathematical skill to ke developed at this early stage is that of matching sets. Children should have practice in seeing that three books and three pencils both are "three", that three books and two pencils are not equal sets.

This informal teaching of number concepts may be with one or two children as they play in sand or draw. It may also be with a whole group as part of oral language classes where the medium of instruction is not the mother-tongue, or during a general conversational period when children share experiences.

Specific class work for numbers can begin once the group can work attentively, three or four times a week, each period for half an hour. This should first be oral, confirming the level of comprehension of the group when dealing with sets of real objects: can they recognize sets up to five? Only after most children can easily recognize, match, and distinguish sets of real or pictured objects, should you introduce the symbols, 1, then 2,3,4,5, to match with the sets. Throughout the Pre-Primary class, use of real objects for the child to manipulate himself must continue. The flannelboard and sand-paper numbers are useful for this stage. Writing numbers follow-recognition.

Addition seems to be easier for children than subtraction, and so comes first. It is taught as the combining of sets to make one large set. It has certainly come up many, many times

informally. It is important that children realise that $1+2=3$ and also $2+1=1+2$, that there are many possible combinations of sets to make the set "3". The empty set, 0, should also be included: $0+3=3$. Children should also recognize that counting is the same as adding 1 to every number.

$0+1=$ X
$1+1=$ XX
$2+1=$ XXX
$3+1=$ XXXX etc.

In counting, children should recognize the repetition that occurs in every decade, e.g.

20, 21, 22, 23.....30, 31, 32, 33.....40. 41, 42, 43....

The sequence of topics can be as follows:

1. Recognizing sets of real objects 0—5.
2. Matching sets. Comparing sets: more, less, equal, greater than, less than.
3. Making sets O—5.
4. Recognizing, saying, and matching numbers with sets.
5. Recognizing and saying numbers.
6. Counting to 10 (occurs along with steps 1-5).
7. Steps 1 - 5 for the sets 6 - 10.
8. Writing numbers to 10 (first straight line numbers 1,7,4 then the others, in order), still matching numbers with sets.
9. Counting to 50.
10. Addition and subtraction to 5, with real objects, and in writing if the group is ready.

Supplementary Notes 1

ACTIVITY BOXES

All dimensions are outside dimensions.

6 boxes, 20″ x 20″ x 3″
1″ putty all around, permits easy stacking.
wooden sides, $\frac{1}{4}$″ thick
Plywood bottom $\frac{1}{8}$″ thick
Plywood lid over top box
labelled on four sides.

BOOKS:	no small boxes	
DOLLS:	2@13″ x 13″ x $1\frac{1}{2}$″	for clothes.
	2@$6\frac{1}{2}$″ x $6\frac{1}{2}$″ x 3″	for toy vessels.
SCIENCE:	1@13″ x 13″ x 3″	for various materials for
	2@$6\frac{1}{2}$″ x $6\frac{1}{2}$″ x 3″	sorting and collec-
	2@ $6\frac{1}{2}$″ x $3\frac{1}{4}$″ x 3″	tions, changed accord-
	8@ $8\frac{1}{4}$″ x $3\frac{1}{4}$″ x3″	ing to the unit being studied.
PAINTING:	1@ $19\frac{1}{2}$″ x $3\frac{1}{4}$″ x 3″	for brushes
	(1 set of tin massala boxes to hold ready paints)	
	Paper loose.	
DRAWING:	6@$3\frac{1}{4}$″ x $3\frac{1}{4}$″ x 3″	for crayons.
	Paper loose.	
PAPER WORK:	2@13″ x 13″ x $\frac{1}{2}$″	for different papers.
	2@$6\frac{1}{2}$″ x $6\frac{1}{2}$″ x 3″	for smaller papers.
	2@$6\frac{1}{2}$″ x $6\frac{1}{4}$″ x 3″	for scissors and gum brushes.
	6@$3\frac{1}{4}$″ x $3\frac{1}{4}$″ x 3″	for crayons, gum, string clips, etc.

and/or

SEWING:	2@6½″ x 3¼″ x 3″	for cards and beads.
	10@ 3¼″ x 3¼″ x 3″	for beads, ready plastic threads, extra plastic thread, needles, reels.
	1@13″ x 13″ x 3″	for wooden boards.

(See Supplementary Notes 2.)

Small boxes are placed in the large boxes in any grouping convenient for work in each activity, and can be shifted as needed.

Supplementary Notes 2

SEWING

Various types of sewing activities, in a graded sequence, can supplement or replace the paper work activities described in the body of the Handbook. It is also a set activity, and as such serves the same purposes as developed in Paper Work. Furthermore, it requires materials likely to be already available in a Pre-Primary School or easily obtainable from the local bazaar. It involves more initial expenditure but very little replenishment of supplies.

MATERIALS

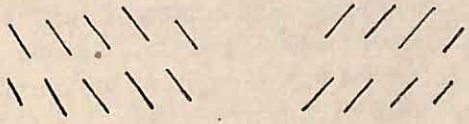
1. About 200 ceramic beads (used for animal decorations) in assorted colours and sizes from one inch long to one-fourth inch.
2. Plastic thread or wire.
3. Small dishes or boxes to keep beads for individual use. 1 larger box for storing beads.
4. Many sheets of stiff card paper, approximately 3" x 6".
5. Large embroidery needles, preferably blunt.
6. Brightly coloured heavy sewing threads.
7. Boxes for storing cards, needles, threads, scissors.
8. Scissors.
9. Pencils.
10 4 Boards 11" x 11" x 3/8" perforated with 1/8" holes in ten lines of ten holes. Not essential but desirable.

METHOD

Follow procedures as in all Child-Directed Individual Activities, making materials easily accessible and giving responsibility for their maintenance and order to children, letting children choose this as an activity, encouraging but not forcing children through the sequence listed.

1. A child sits with a dish or box of beads and a plastic thread about 24 inches long with one bead tied to the end. He strings beads as he likes, as many as he has patience to do.

2. Many conversations are possible for vocabulary building and developing the ability to classify. Praise a child's long, long string, ask him to count the beads. Ask him to point to all the blue beads, etc. Ask him to name the colours, to count the beads of a given colour. He selects only large beads to string, or only small, or only beads of one colour.
3. He makes patterns in stringing : one large, one small, one large, one small ; two large, two small ; one red, one blue; three white, three green ; two large, one small ; one white, one green, one yellow; one white, two green, three yellow. Infinite varieties are possible. The children may have their own ideas or you may suggest some patterns. Only keep in mind the difficulties involved in each pattern and suggest something within the child's ability yet challenging to him. You must understand the sequential steps thoroughly.
4. Sewing with plastic thread on boards, first in straight lines from left to right, top to bottom, to get children accustomed to the direction used in reading, and for the simplest straight line work.
5. More complicated patterns on the boards, such as stitching all around the outside edge and going spirally towards the center; diagonals; adding one bead between every two holes; adding beads of a certain colour; adding beads in a certain pattern.
6. Sewing with needle and thread on cards. Prepare the cards in advance, drawing designs and punching small holes where the child is to insert his needle. Patterns should be drawn on both sides of the card, with lines where stitches are to be made :



Front Back

Watch that both front and back are stitched systematically. The first patterns are of straight lines, many variations are possible:

front — — — — —

back — — — —

7. Stitching between stitches on the same side, in another or the same colour.
8. Draw simple outline pictures for stitching.
9. Children draw their own outline pictures for stitching. The "set" activity for training skills has now become "open" and encourages creativity.

Supplementary Notes 3

READING AND WRITING

The first introduction to reading and writing consciously opens the whole world of symbolization. Children have already been "reading" symbols for some time: a smile means that someone is happy, a saffron dhoti means a sadhu, the green light means go. Now they become aware that the funny little squiggles big people put on paper equal words that one speaks. It is critical to a child's whole future attitude toward reading that he identify reading and writing as communication, as a means which complements speaking and listening, when we want to keep a record or talk to someone far away. They are thus not just chores to be mastered, one more series of exercises in school, but a rewarding means of sharing ideas.

Children should come to realize the nature of the structure of their language. Their oral work should be of this nature, and the same is carried over into written communication. Thus they listen for similarities of sound, and recognize the similarities in letter symbols. Work with letters can begin approximately in September of the Kindergarten year.

The method for teaching Reading and Writing suggested below is only one among many. The author believes that it has certain advantages over other methods in current practice:

1. The child starts reading and writing at the same time, thereby gaining the support of several senses and a kinesthetic as well as visual involvement. Some children who have difficulty in writing can progress with reading only and let writing follow when their coordination improves.

2. A phonetic method is particularly valuable for children to whom English is not a native language and whose vocabulary is limited. Learning letters by their sounds requires careful attention to the sounds, helping to strengthen the ability to hear already being developed in oral English work.

3. The method has a systematic sequence while providing opportunities for children to discover and improvise on their own.
4. It is based upon the child's way of learning, providing activities and participation.

Some persons may object to including a section on the teaching of Reading and Writing in the Pre-Primary School, claiming that it is better to wait until the child reaches First Standard for any such work to begin. However, there are two arguments in its favour:

1. Many parents, teachers, and administrators place great emphasis upon these skills at a very early age. Since these people at present will continue to insist upon teaching Reading and Writing to three and four year old children, it is better that they do so by a clear and systematic method adapted to the child.
2. There will be some children actually ready to read and write before the age of five. They thould not be discouraged in their enthusiasm and ability but encouraged to progress and the road shown to them. Certainly, these skills should not be forced upon all alike.

MATERIALS

1. Paper or slates with lines printed or drawn. Space between lines should be approximately ½ in., so that children will not be cramped.
2. Flannel board at least 2 ft. x 3ft. This can easily be made by stretching jute tightly over a wooden frame.
3. Flannelboard letters can be cut from light cardboard. Small pieces of medium-rough sand-paper glued to the back make them stick on to the flannelboard.
4. Word and phrase cards written on light cardboard.
5. Picture charts for at least the first six consonants. The letter is written at the top, then a series of pictures of words or actions beginning with the common sound of the letter

are pasted in an orderly fashion on the chart. Make sure your initial sound is consistent (i. e. not city for "c"). About 20 in. x 30 in.

6. Paper, small pictures from magazines, scissors, gum (for making "My Own Book").

METHOD

In English start the formal teaching with *small printed letters*, these being the ones most commonly found in books ; capitals are added as needed. Teach letters in a *sequence* in which they will be immediately useful in forming words, and not in alphabetical order. Teach *phonetically*, by the most common sound of the letter, rather than by its name ; in this way, children soon begin putting letters together to read words that they can *sound out and read independently*. Make sure these are words that are already in their vocabularies, so there will be no additional problem with meaning. After some experience, the children learn to sound out by themselves, thus to read, simple words that they have never seen before. Pay great attention to pronunciation, so that reading and spelling may be accurate. However, since English is in part a non-phonetic languuage, also teach some words by "*sight*", i. e. the children must learn to recognize and remember the word as a whole, rather than to sound out its individual letters.

Writing of the letters starts at the same time as reading of the letters, but writing words follows a bit after reading words.

When done on paper, all written work can be collected and bi-weekly sent home to parents.

At the same time that reading letters and words is started, begin writing them, first in the air or in sand, or on the table with the fingers. In this way the children will become familiar with the formation of the letters before they actually take pencil or chalk in hand to make them, thus minimizing the tension they are bound to feel. Not all children will be ready to write when they are ready to read.

Approximate sequence of introducing letters, with words formed from them. Sight words come at any time after Step 2. One

step should be relatively fixed in the mind before another is stressed.

1.	c b a t r	cat, bat, rat
2.	h s i	hat, sat, sit, hit, rats, hats, cats, bats
3.	d l n	sad, bad, lid, hid, rib, ran, band, hand, sand, stand.
4.	f g	fat, fan, fin, big, rag, bag, ant, fast, fist, etc.
5.	e o u	
6.	m p v	
7.	j k w y z	
8.	q x	

Sight words: this, that, these, those, there, is, are, name, my, house, eat, talk, down, names of children in the class, etc.

1. Use flannel board to put up *letters*. Say the sound, have the children repeat. Start with two or three letters, adding all in the first group in rapid succession, working with all together. Give children letters at their seats. Ask them to match the one you point to on the board, putting it in a special place near them. After a few days with single letters, put up the letters to make "cat", sound out the sequence, help them realize this says cat. They match it at their seats. Watch for correct order.

   Make games: see who can find the right letter to match first, then put several letters on the board and ask children in turn to find certain ones; put several copies of each letter at random on the board, ask children to give you certain letters that match with these on the board; etc.
2. As introduction to writing letters, simultaneously have them draw over the letter at their places, draw in the air,

"copy" a letter which is in front of them by writing with a finger on the desk or floor.

3. Making words with letters : Children match at the flannel-board with letters that have been given out. Match at their seats, "copying" from the board. Children make words by dictation of letters, at board, at seats. Stress correct sequence.
4. Similarly for all steps.
5. Sight words are introduced after children know some phonetic words that will complete a sight phrase. Introduce a card with "This is a——" and add phonetic word at the end on a separate card. Say each sight word while running your finger under the written word. Enormous repetition is needed.
6. "What words begin with the sound 'C'?" They should be able to give a fair number of English words, as well as identify pictures on the charts.
7. Children can start making their own alphabet books in a similar manner, looking for pictures in magazines and pasting them on papers of uniform size, later to be tied together.
8. Writing starts with single letters only, practising for a whole page or more. Make a sample on each child's paper for him to copy. Stress correct formation.
9. Have the children write on the blackboard. Stress bigness.
10. Once children can correctly make words with cut-out letters (correct letter sequence most of the time), then they can write words. Write a sample on each child's paper for him to copy. Stress correct formation.
11. Dictate words (spell phonetically). "Cat, c-a-t, cat." This is a good check on whether or not they remember the letters.
12. Later children copy letters, words from the black board.
13. Write simple sentences of command on the balckboard for the class to read and copy. Write them on cards for individual work.
14. By about the middle of the second term, the more ad-

vanced children are able to read and write many words and simple sentences. At this stage, they make their own first reading book, pasting or drawing pictures and writing an identifying sentence in a blank book that you prepare for them. They choose their own pictures within the range of what they are able to read and write. The book is thus wholly their own. They take great satisfaction in "My Own Book", have a better realization of what a book is and what goes into making one, that a book is made by people about what people are interested in. The first book of about ten pages is generally completed within a few weeks, as they need not work on it every day. Some children will complete two or three books before the end f the term. This activity can be coordinated with Child-Directed Individual Activities.

Supplementry Notes 4

CELEBRATIONS AND TRIPS

The school syllabus is not complete without some occasions when the routine is broken and when the children have an immediate contact with the world outside of school. For school itself to be a truly meaningful experience, its activities must be related to the other aspects of the children's lives and to the larger society of which it is a part. The syllabus itself, of course, does this in many ways. One of the ways by which it is extended is to include things which are beyond the four walls of the classroom and beyond the required content.

CELEBRATIONS

The holidays and festivals which occur throughout the year are very important to all, and especially to children. They are times of gaiety, great dressing-up and fanfare, good things to eat. Children will be celebrating them at home and in their communities, and celebrations in school link school and community in the children's minds, bring them closer together.

Since one of the special characteristics of a school is to have many children of the same age grouped together for work and play (as opposed to the family, where people of all different age groups live, work, play together), it is appropriate that each group in the school celebrate festivals in a way suitable to their own age, or each contribute at their own level to the effort of the entire school. This means that children themselves should make their decorations, model the statues and dress them, act in plays or sing songs according to their maturity.

The process of preparing for celebrations is just as important as the final day itself, an emphasis which has been made several times throughout the Handbook.

For Ganesh Chaturthi, a Pre-Primary class can model their Ganesh from clay themselves: one child makes a large ball for the body, another makes a smaller ball for the head, another rolls a fat "snake" for the trunk, etc.; those who are less able

can all make ladhus or string flowers for garlands. Thus there is a joint effort, each participating to the extent that he is able. This gives great satisfaction to each and every child, as well as the glow of having contributed to the final group effect.

The concern for process and continuity is applicable to the preparation of dramas and other functions also. It is far more meaningful for children to present to parents a Diwali Programme composed of dramatizations of a favourite story or a trip to the zoo that they have enacted many times in their class or to exhibit their paintings done throughout the term, than to prepare items especially for the function itself. The programme then becomes the culmination or final step in a process, and not an isolated experience. The last bits of practice may be done intensively, the week before the programme, but little should be necessary when the children are familiar with the materials.

TRIPS OUTSIDE AND VISITORS TO THE CLASS

These experiences which bring the larger world closer to the children and within their understanding should be closely related to what they are doing in the class and should always have an educational purpose. Several trips and visitors are suggested in the Handbook, under SCIENCE.

A trip or visitor at least once a month is desirable, one of each every month is most desirable.

Trips need not be costly or elaborate. Children can walk to the nearest vegetable stall, for example, when studying seeds, examine some of the vegetables to see which contain seeds and what they look like. If possible, they may purchase a few to take back to school and observe more closely, at leisure. Or the teacher may ask the vegetable-seller to cut a lady-finger, a brinjal, a tomato, a pumpkin, to show children the seeds inside. Children may have seen these vegetables a hundred times before, but this time is different since they are guided to look for certain things and since they are with a whole group of children. Common, everyday things can seem quite new and exciting, when presented in a new context and in a group.

For visitors, parents can be called upon to talk about their work or their special interests. Teachers should be familiar with parents' background and interests, and with other people in the community who might also be useful resources. Since adults do not always know how to explain things at a child's level, the guest may need some warning and advice, and the teacher may have to re-explain and interpret his remarks. If the visitor has something concrete to show or do, rather than only speak, it is certainly better.

Entertainment, be it trip to a playground or a magician who is passing by, also has its place, as long as it is only one among a majority of trips for educational purposes. It is educational just for children to go out of school as a group, to know how to behave in public, to share facilities, but this as well as intellectual stimulation is satisfied on a trip with content.

Supplementary Notes 5

TEACHER-PREPARED TEACHING AIDS

There are certain teaching aids that the teacher has to prepare:

1. Charts of coloured pictures of fruits, animals, birds, insects, transportation of various kinds, common activities around a town. Refer to the List of Materials.

   Cut the individual small pictures from the charts and paste these on plain coloured cards (post-card size) available in the stationery shop, all animals on cards of one colour, all eatables (fruits and vegetables) on another colour, etc.

2. Large physiology charts should be cut up along the outside line of the diagram and pasted on plain large cardboards; these should be nailed to the door or stuck to the walls.

3. While making the different-coloured and different-shaped cards for sorting, three large light-coloured cardboards should be painted in three bright basic colours with sponge wet with paint. Then the three shapes should be traced on these and cut along the lines. The three different shapes are rounds, squares and triangles.

4. Worksheets for Readiness Exercises need to be drawn on cardboard, as described in the Section on Readiness.

5. A flannel board should be prepared, as well as cut-out letters and numbers with sand-paper backing, to stick on the flannel board. Details of these materials are given in the Section on Reading.

Supplementary Notes 6

TEACHER'S LESSON PLAN BOOK

Throughout the period of the research, the academic year from mid-June to mid-April, teachers kept log books of work done in the class. A long registry book was used; the left-hand page was for advance planning and the right-hand page was for the teacher to note what actually happened. This helped the teacher to realize how actual classroom activity may differ from plans.

Planning is done on a weekly basis, with notes for each day separately. All the activities children do are to be included. For example :

Monday July 12	Individual Activities :	1. painting with large brushes, red, blue paint.
	9 :00-9 :45	2. books.
		3. clay.
		4. sorting geometric shapes, buttons in sorting trays.
	Group Activities	1. sand
		2. water, introduce pipes.
	9 :45—10 :15	3. blocks, relate to hospital trip.
		4. dolls, make sure Jyoti is included in the play.
	Nasta and Recess 10 :15—10 :45	
	Individual with Teacher 10 :45—11 :15	1. readiness exercises: drawing lines in squares, worksheets, colouring squares for Deepak, Hasu, Kamal.

Group with Teacher	1. story: Three Bears, have children re-tell.
11:15—12:00	2. science: give out baskets for planning, children get earth and water, give out mug and plant it.

While planning, the teacher should look at what she planned and what she actually did the previous week, and should keep in mind what topics she wants to cover by the end of that term. Referring to her notes on individual children, she should also remind herself which children need particular help.

Sometimes occasions arise when it does not seem possible or desirable to follow the planned lesson. The children may get so involved in a discussion that you do not want to cut them short when the period is over. Or they may be eager to dramatize a story rather than simply to tell it. The right-hand page is therefore reserved for such comments, to help teacher remember what went well and what didn't, where the children's interests lie. In addition, brief mention should be made of the progress or problems of individual children, so that special attention may be given to those who need it. This recording should be done daily, after the school is over.

The lesson plan book should be checked each week. This helps the teacher to realize which activities and subjects are neglected in spite of the best intentions, and so to include them in the next week.

Supplementary Notes

TEACHER'S NOTEBOOK ON CHILDREN

In order to know the children well, to know the progress and problems of each child and be able to help them in the class, the teacher needs some aid to her memory. She should keep anecdotal notes on each child : what activities he does and does not join, who he plays and talks with, whether he shares and cooperates, if he is healthy, etc.

For this purpose, a regular exercise notebook can be used. Write each child's name at the top of a left-hand page, leaving the right-hand page blank. This gives two pages for writing notes on a particular child. Keep the names in alphabetical order, for easier reference. When the two pages are filled, start the alphabetical listing again where there are empty pages in the back of the book, or use a new book.

Every day four or five children should be especially observed preferably in the class while the children are working or immediately after the class. During Child-Directed Activities in particular, it is perfectly possible to keep notebook and pen in hand while walking from one group to another and talking with children. They may ask what you are writing, in which case tell the truth, but generally they will not pay much attention. If a teacher observes four or five children each day, then in two weeks it is not difficult to observe and record the activities of twenty-five children.

The observations should be jotted down in very short phrases, along with the date and time.

It is important to look over these notes from time to time. Piecing together all the notes on one child gives a total picture of that child as an individual. It also gives a sound basis for comparison with other children in the group and with the developmental norms for that age. The teacher can see patterns of behaviour and can relate these to what she knows of the family background. It is very useful in talking with parents or giving reports, since the teacher then has very concrete points to which she can refer.

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*All books marked Bank Street are available from Bank Street College Bookstore, 69 Bank Street, New York, 10014, USA. Some books are also available from other publishers. Bank Street Booklets are available in packets of several booklets grouped together, as well as individually.

Child Development.

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2. *Almy, Millie. Young Children's Thinking: Studies of some aspects of Piaget's Theory* New York, Teachers College Press. 1966.

3. Biber, Barbara. *Young Deprived Children and Their Educational Needs.* Association for Childhood Education International, 1967.

4. Breckenridge, M.E. and Murphy, M.N. *Growth and Development of Young Child.* W.B. Saunders and Co., 1964.

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20. Piaget, Jean. There are several works of Piaget, dealing with different aspects of the child's mental life : intelligence, language, reasoning, moral judgement, number, space, logical thinking, play. All are available from Routledge and Kegan Paul, London, as well as from other publishers.

21. *Psychological Foundations of the Curriculum.* Educational Studies and Documents No. 26. Paris, UNESCO, 1964.

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24. Strang, Ruth. *An Introduction to Child Study.* Macmillon, 1963.

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Parents.

1. Auerbach, Aline B. *Parents Learn Through Discussion : Principles and Practices of Parent Group Education.* New York, London, Sydney, John Wiley and Sons, 1968.

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Art.

1. Biber, Barbara. *Children's Drawings.* New York, Bank Street Booklet.*

2. Eng, Helga. *The Psychology of Children's Drawings : from the First Stroke to the Coloured Drawing.* London, Routledge and Kegan Paul, 1954.

3. Hoover, Louis. *Art Activities for the Very Young.* New York, Bank Street College of Education.*

4. Lowenfeld, Viktor, and Brittain, W. Lambert. *Creative and Mental Growth.* New York, the Macmillan Company 1964.

Play.

1. Hartley, Frank. *Understanding Children's Play.* New York, Columbia University Press.

2. Hartley, Ruth, and Goldenson, Robert. *Complete Book of Children's Play.* New York, Bank Street College of Education.*

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Science and Social Studies

1. Cleland, D.M. and others. *Exploring Science in the Primary School.*

2. Hochman, Vivienne. *Trip Experiences in Early Childhood.* Teachers Handbook Series No. J. New York, Bank Street College of Education.*

3. Hochman, Vivienne and Greenwald, Mildred. *Science Experiences in Early Childhood Education.* Teachers Handbook Series No. F. New York, Bank Street College of Education.*

4. *Introduction to Natural Science in Primary School,* Paris, UNESCO Publication No. 110.1949.

5. Navarra, John. *Development of Scientific Concepts in a Young Child.* New York, Bureau of Publications, Teachers College, Columbia University.

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Music

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3. Jones, Betty Jensen, *What is Music for Young Children?* Chicago, Illinois, National Association for Nursery Education, 1958.

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Language Arts

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2. Brogan, Peggy and Fox, Lorene K. *Helping Children Read.* New York, Bank Street College of Education.

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Mathematics

1. Adler, Irving. *Magic House of Numbers.* New York, Bank Street College of Education.*

2. *Introduction to Mathematics in Primary School,* Paris, UNESCO-BIE Publication No. 120, 1950.

3. Jonas, Arthur, *New Ways in Mathematics.* New York, Bank Street College of Education.*

4. Land, Frank W. *New Approaches to Mathematics Teaching.* New York, Bank Street College of Education.

International Exchange

1. *Education Periodicals.* Paris, UNESCO, 1963.

2. *Handbook of International Exchanges.* Paris, UNESCO, 1967.

3. *Study Abroad: International Scholarships and Courses.* Volume XVIII. Paris, UNESCO, 1970-71, 1971-72.

Journals

1. *Childhood Education.* Association for Childhood Education International, 3615 Wisconsin Avenue Northwest, Washington, D.C. 20016, USA.

2. *Children.* United States Government Printing Office, Division of Public Documents, Washington D.C. 20402, USA.

3. *Elementary School Journal.* University of Chicago Press, 5750 Ellis Avenue, Chicago, Illinois 60637, USA.

4. *The Froebel Journal.* National Froebel Foundation, 2 Manchester Square, London W.1, England.

5. *The New Era in Home and School.* World Education Fellowship, 55 Upper Stone Street, Turnbridge Wells, Kent, England.

6. *Young Children. National Association for the Education of Young Children.* 1629, 21st Street Northwest, Washington D.C. 20009, USA.

PARTIAL LIST OF INSTITUTIONS CONCERNED WITH INFORMATION AND TRAINING FOR PREPRIMARY EDUCATION

INDIA*

Andhra Pradesh

1. Pre-School Training Section, Shri Venkateshwar University, Tirpati.
2. Andhra Pradesh Council of Child Welfare, Hyderabad.
3. Pre-Basic Training School, Government Training College, Hyderabad.
4. Pre-Basic Training School, Pentapadu, West Godavari.

Assam

1. Pre-Primary Teacher Training Centre, Dibrugarh.

Bihar

1. Teachers Training School, Mahendura, Patna 6.
2. Teachers Training School, Pusa, Darbanga.
3. Teachers Training School, Kumarbagh, Champaran.
4. Teachers Training School, Pindrajora, Dhanbad.
5. Teachers Training School, Women Lakhisarai, Monghyr.
6. State Federation of Pre-Primary Institutions. Patna.
7. Teachers Training College, Bhagalpur.
8. Bihar Council of Child Welfare, Patna.

Goa

1. Institute of Education, Panjim.

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*Compiled by Dr. Mrs. Rajalakshmi Muralidharan, Reader, Deptt. of Educational Psychology and Foundations of Education, NCERT.

Gujarat

1. Pre-Primary Teachers Training College, Nadiad District, Kaira.
2. Pre-Primary Training College, Vinctia Block, Ahmedabad.
3. Smt. Manekha Pre-Primary College, Ahmedabad.
4. Gujarat Council of Child Welfare, Junagadh.
5. Home Science Department, M.S. University of Baroda, Baroda.
6. Becharbhai Madhubhai Patel Pre-Primary Training College, Nadiad District, Kaira.

Himchal Pradesh

1. Government Basic Training College, Solan.

Kerala

1. Early Childhood Education, St. Teachers College of Home Science, Ernakulam.
2. Kerala State Council of Child Welfare, 15/674 Bhaklivilason Rd., Trivandrum.
3. Government Nursery Training School, Cotton Hill, Trivandrum.
4. Government Nursery Training School, Kozhikode.
5. Government Nursery Training School, Alleppy.

Madras

1. Arundale Training Centre for Teachers, Thiruvanniyur, Madras 41.
2. Madras State Council for Child Welfare, 1 Prakasha Mandali St., Madras 17.
3. Children's Garden School, Brindavan Kindergarten Training School, Mylapore, Madras 4.
4. Teachers Training Centre, Karalikal, Pondicherry.

5. Shri Avinashalingam Home Scince College, Coimbatore 11.
6. Nursery Training School, Balar Kalvi Nilayam, 2 Ritherdon Rd., Vepery.
7. Pre-Basic Training School, P.O. Kasturbag Ram, Erode.

Madhya Pradesh

1. Nai Talim, Pre-Basic Training College, Shegaon, P.O. Wardha.
2. Madhya Pradesh Council for Child Welfare, Indore.
3. Pre-Basic Training School, P.O. Kasturbagram, Indore.
4. Hawa Bagh Women's College, Jabalpur.
5. Government Pre-primary Training Institute, Jabalpur.

Maharashtra

1. Early Childhood Education, S.N.D.T. college of Home Science, Queens Rd., Bombay.
2. Early Childhood Education, Nirmala Niketan, 38 Marine Line, Bombay 1.
3. Preprimary Training College, Dhulia.
4. Seva Sadan, Uttar Ambazari Rd., Nagpur.
5. Preprimary Training College, Solapur, District Sholapur.
6. Maharashtra Council of Child Welfare, Kosabad.
7. The Mary B. Harding Kindergarten Training College, Sholapur.
8. P.S. Bal Mandir Training College, Deopur, Dhulia.
9. Shishu Vikas Teachers Training College, Aurangabad.
10. Poona Seva Sadan Society's Training College, Nagpur Branch.

Manipur

1. Manipur Council of Child Welfare, Imphal.
2. D.M. College, Imphal.

Mysore

1. Vijay Teachers College, Bangalore 25.
2. Early Childhood Education, Central Institute of Home Science, Bangalore.
3. Mysore State Council for Child Welfare, Malleshwaram, Panchavati, 15 Cross Rd., Bangalore.
4. Preprimary Teachers Training Institute, Bangalore.
5. Swami Vivekananda Nursery Teachers Training College, Bangalore.
6. Preprimary Teachers Training Section, Government Training College for Women, Dharwar.
7. S.T.B.T.S. for Women, Gullbarga.
8. Nursery School Teachers Training College, Jagadumba Sishu Vihar.
9. Preprimary Teachers Training College, Vidyanagar.
10. Maharani Training College for Women, Mysore 1.

New Delhi

1. Indian Association for Pre-School Education, National Institute of Education, Shri Aurobindo Marg, New Delhi 16
2. Department of Educational Psychology and Foundations of Education, NCERT, Sri Aurobindo Marg, New Delhi 16
3. Indian Council of Child Welfare, 4 Rouse Avenue, New Delhi.
4. Central Social Welfare Board, Jeevan Deep Building, Parliament St., New Delhi.
5. Teacher's College, Jamia Millia, Islamia, Jamianagar, New Delhi.

Punjab

1. Punjab State Council for Child Welfare, Balbhavan, Sector 23, Chandigarh.
2. S.D.H.S. Gita Bhavan, Gurdaspur.

3. Dayanand Training College, Satnampur, Phagwara.
4. Ramgarbia Training College, Satnampura, Phagwara.

Rajasthan

1. Rajasthan State Council for Child Welfare, Niwas Garden, Jaipur.
2. Government Preprimary Training College, Nagpur.
3. Montessori Teachers Training Institute, 263-D Bihari Marg, Beni Park, Jaipur.
4. Montessori Training College, Rajaldesar.
5. Center of Cosmic Education, Jaipur.

Tripura

1. Post Graduate Basic Training College, Agartala.
2. B.T. (S.T.T.) College, Agartala.

Uttar Pradesh

1. Pre-primary teachers Training College, Bal Nikung Swarup Nagar, Kanpur.
2. Uttar Pradesh Council of Child Welfare, Lucknow.
3. Government Nursery Training College, Allahabad.
4. Center of Cosmic Education, Preprimary Teachers Training College, Malviyaji Rd., Allahabad.
5. Lal Bag Nursery Training College, Lucknow.
6. Preprimary Teachers Training College, Station Rd., Lucknow.
7. C.T. Nursery Training College, Lucknow.

West Bengal

1. Institute of Education for Women, Hastings House, Alipore, Calcutta.

2. West Bengal Council for Child Welfare, 47 Chowagher Rd., Calcutta.
3. Teacher Training Department, Association Montessori Institute, 18 Suran Tagore Rd., Calcutta 19.
4. Teacher Training College, Loretto House, Calcutta.
5. Chittaranjan Teacher Training Institute, Calcutta.
6. Gokhala Teachers Training Institute, Calcutta.

ENGLAND

Those wishing to pursue further study in Great Britain are advised to consult the nearest British Council officer. If this is not possible, write for application, one year in advance (the academic year begins in September) to Clearing House for Colleges of Education, Registrar, Central Register and Clearing House, 151 Gower Street, London, W.C. 1.

For information about courses of study and admissions, consult:

1. *Programme of One Year Courses and One Term Courses for Qualified Teachers.* Department of Education and Science, Curzon House, Curzon Street, London W. 1
2. *Programme of Courses for Commonwealth Bursars,* annual publication of the Department of Education and Science.

Organizations concerned with Early Childhood :

1. Montessori International Association
   Maria Montessori Training Organization
   26 Lyndhurst Gardens
   London NW. 3
2. National Froebel Foundation
   2 Manchester Square
   London W.1
   (publishes the "Froebel Journal")

3. Nursery School Association of Great Britain and Northern Ireland
   89 Stamford Street
   London SE.1
   (offers Summer School, International School, Refresher Courses, newsletter free to members, pamphlets)
4. World Education Fellowship
   55 Upper Stone Street
   Turnbridge Wells
   Kent
   (publishes "The New Era in Home and School")

CANADA

1. McGill University, Montreal.
2. Brandon University, Brandon, Manitoba.
3. Child Study Centre, Faculty of Education, University of British Columbia, 2855 Acadia Road, Vancouver, British Columbia.
4. University of Manitoba, Winnipeg, Manitoba.
5. Summer Teacher Training Program, Manitoba Department of Youth and Education, Curriculum Branch, 1181 Portage Avenue No. 411, Winnipeg 10, Manitoba.

UNITED STATES*

Some colleges and universities offering undergraduate and postgraduate degrees in early childhood education or a degree in education with emphasis on early childhood education.

1. Florida State University, School of Education, Tallahassee, Florida, 32506.

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2. The George Washington University, School of Education, Washington D.C. 20006.
3. Georgia Southern College, Statesboro, Georgia 30458.
4. Iowa State University of Science and Technology, Department of Child Development, Ames, Iowa 50010.
5. National College of Education, 2840 Sheridan Road, Evanston, Illinois 60201.
6. San Francisco State College, School of Education, 1600 Holloway Avenue, San Francisco, California 94132.
7. Virginia State College, Deprtment of Elementary Education, Petersburg, Virginia 23803.
8. University of Georgia, Athens, Georgia 30601.
9. Wheelock College; 39 Pilgrim Road, Boston, Massachusetts 02215.
10. Winthrop College, Rock Hill, South Carolina 29730.

Organizations concerned with Early Childhood :

1. Child Study Association of America, Inc.
   9 East 89 Street
   New York, New York 10028.
2. Association for Childhood Education International
   3615 Wisconsin Avenue Northwest
   Washington D.C. 20016.
   (publishes "Childhood Education")

The aims of this Handbook are four-fold :

- to help teachers observe children and to stimulate their understanding of children's behaviour ;
- to define principles and purposes on which to base a programme for the Pre-Primary School ;
- to provide an organized structure for activities, based on the defined principles and purposes ;
- to provide guidelines for day to day work with children.

This material is one outcome of a research study conducted under the auspices of the Gujarat University School of Psychology, Education and Philosophy.

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